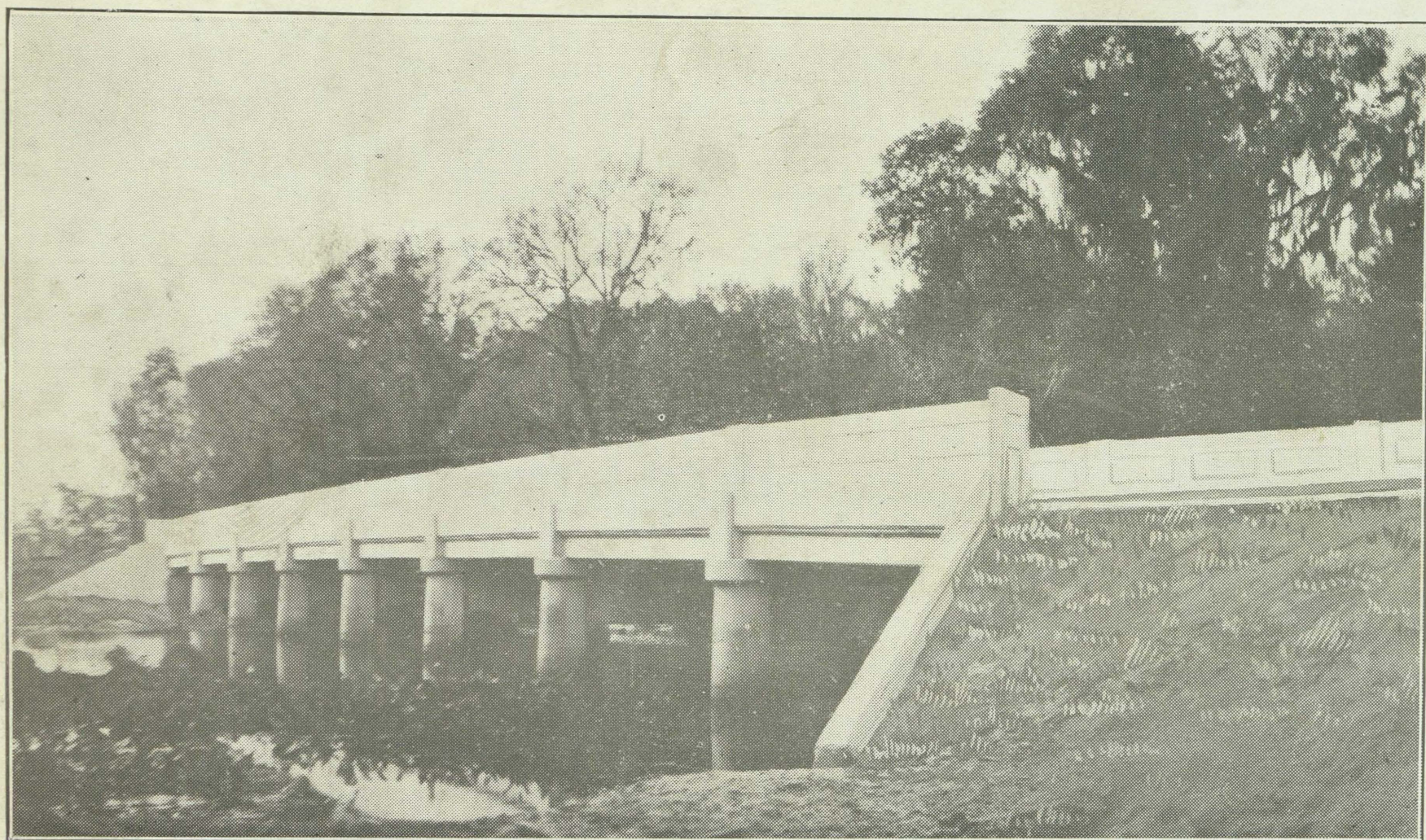


# FLORIDA HIGHWAYS



**Vol. 1**

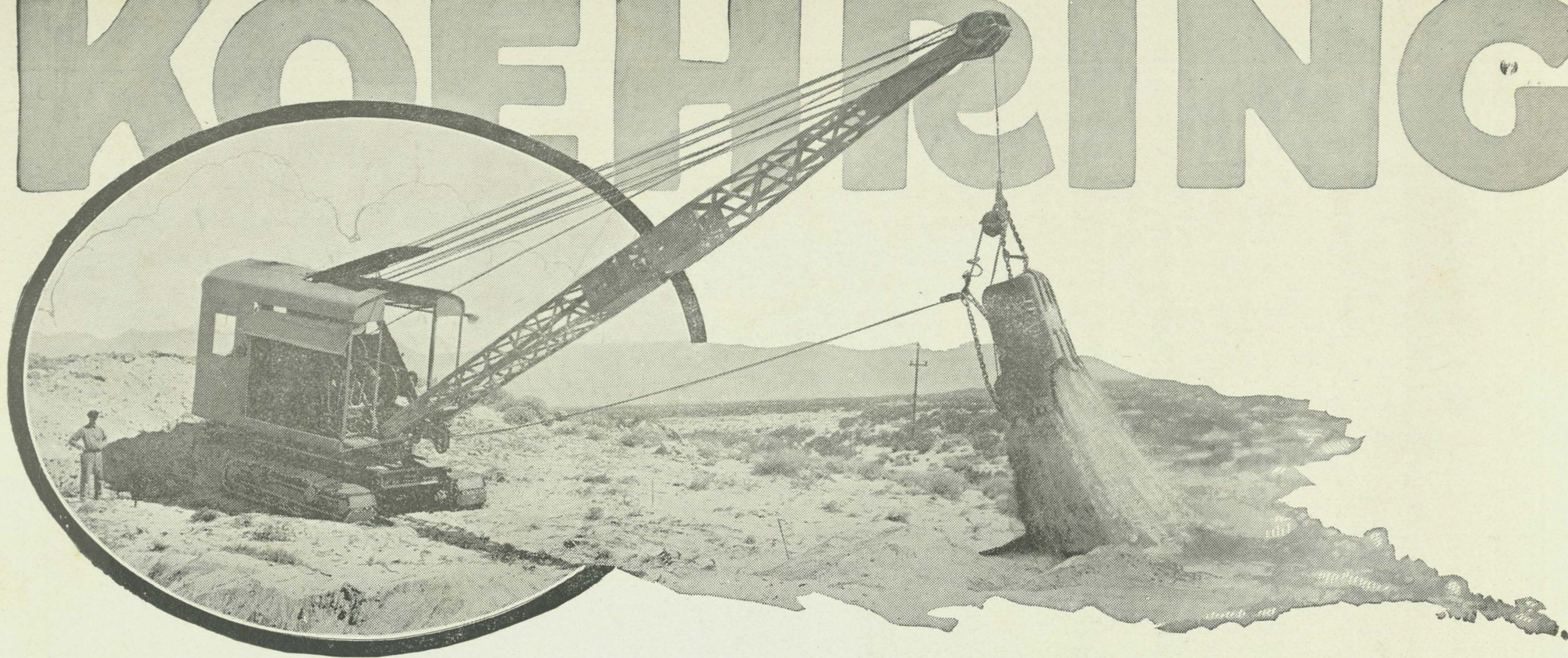
**JANUARY  
1924**

**No. 2**

**PUBLISHED BY THE STATE ROAD DEPARTMENT**



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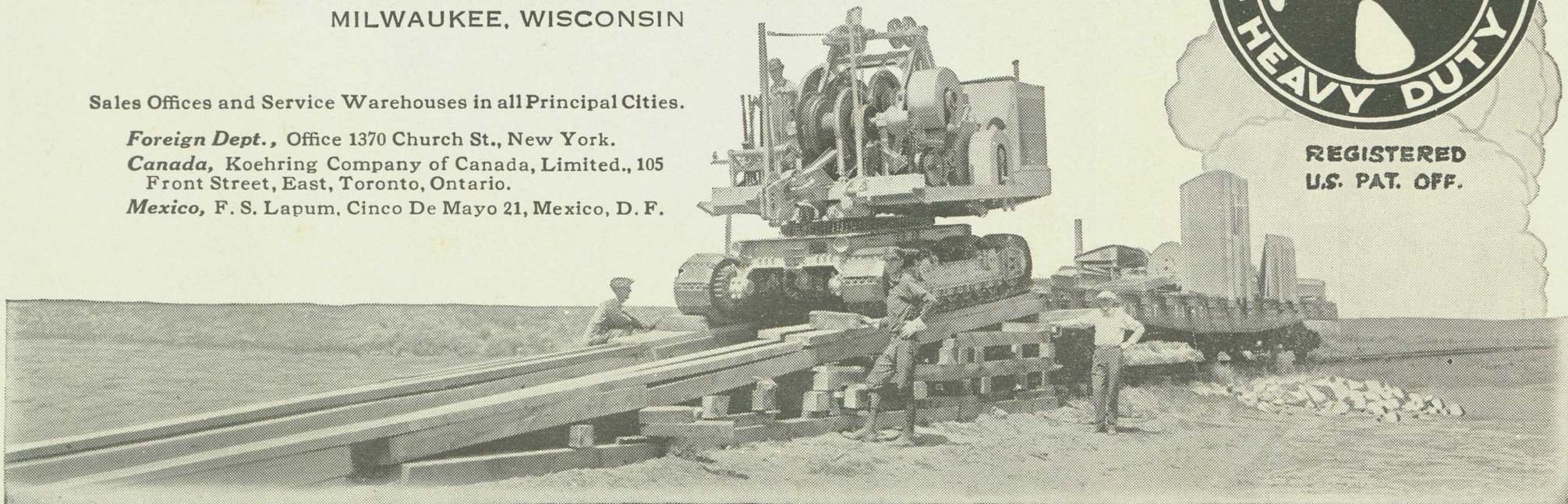
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*Koehring Crane Excavators built in three capacities. Write for Crane Excavator bulletin.*



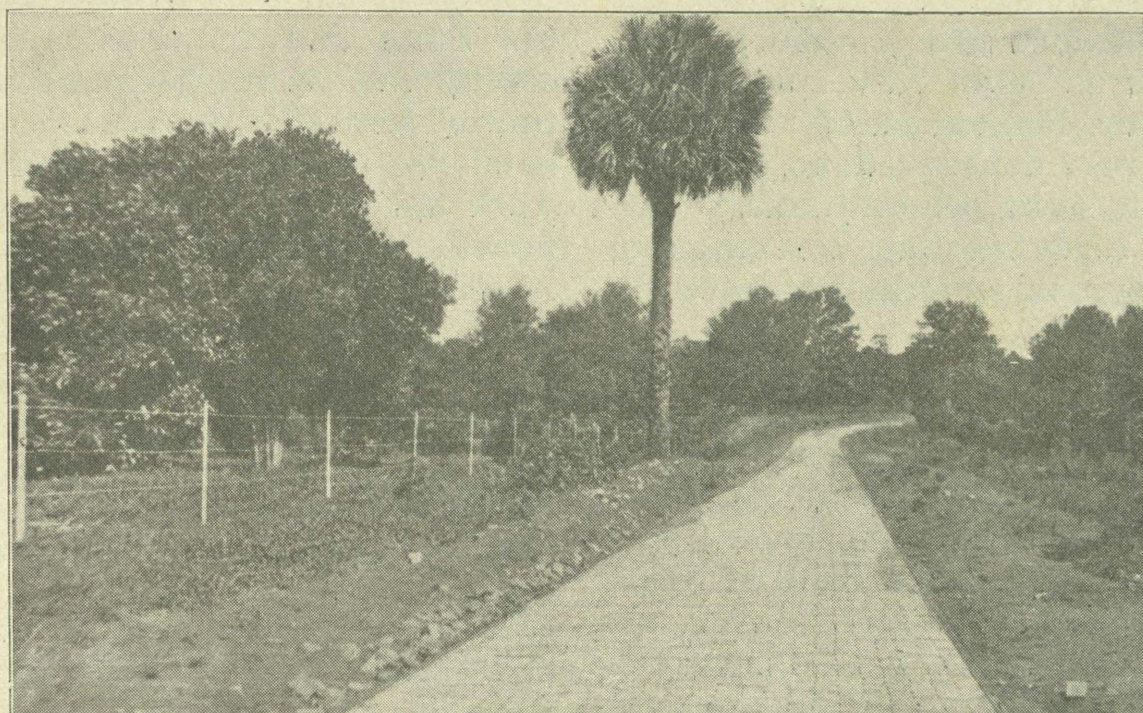
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# FLORIDA HIGHWAYS



Vol. 1

JANUARY, 1924

No. 2

(Application for entry as second-class matter at the post office at Tallahassee, Florida, pending.)

## Federal Aid—What it is and How it Works

One of the largest propositions with which the State Road Department deals is that of Federal Aid. And the subject is so little understood by the public generally, that Florida Highways believes it could not do better than set out here an article which appeared last year simultaneously in the Florida Times-Union and the Tampa Tribune, and in the preparation of which the editor of this magazine collaborated.

### Federal Aid

There is perhaps no subject in connection with the working out of a good roads program about which there is so much confusion as that of Federal Aid. There is in some quarters an impression that the Federal Government appropriates a lump sum for aid in road construction and that all that is necessary to enable the Road Department to secure the benefit of that aid is to put up an equal amount. No man or body of men wish more earnestly that this conception were correct than the State Road Department.

The Federal Government first made an appropriation for aid to the states in road construction by a rider to the post office appropriation bill approved July 11, 1916, and this was applicable only to post roads. As there are comparatively few of such roads in Florida, it was difficult for this State to receive the benefit of the act. By amendment approved in 1919, the scope of the appropriation was enlarged to cover roads connecting post roads, and the states were required to formulate and submit maps showing a five year program, the expenditures, however, to be confined to arterial roads. This amendment also very materially enlarged the appropriation, the first

appropriation having been extremely small, Florida being allotted for the first year about \$50,000. By an amendment approved November 9, 1921, practically all reference to post roads was cut out and there is now no necessity for submitting post road data. The present law contemplates a state and federal highway system. The latest amendment did not increase the amount of Federal Aid, but it placed the operation of the act on a more definite basis, in that it required that all Federal Aid should be expended on a state and federal highway system which would represent not in excess of seven per cent of the total public road mileage of any state. This is what is sometimes referred to as the "Seven Per Cent System" and is later referred to. Of the seven per cent of such entire road mileage of the state, not in excess of three sevenths constitutes what is known as the primary system, and four-sevenths, the secondary system. The act further provides that not less than sixty per cent of the amount of Federal Aid granted shall be expended upon the primary system, while the remainder may be expended upon the secondary system.

### How Federal Aid Works

The practical working of Federal Aid is in charge of the Federal Bureau of Public Roads, a branch of the Department of Agriculture. The country is divided into ten districts, Florida being within the tenth district, the central office of which located at Montgomery, Alabama, is in charge of R. E. Toms, district engineer. The representative of the bureau in Florida is H. J. Morrison, senior highway engineer, with headquarters at Gainesville. Mr. Morrison is the official through whom the State Road De-



partment works most intimately. There has always been the heartiest co-operation between the Bureau of Public Roads and the Road Department of Florida, and Mr. Morrison, in particular, has labored untiringly to be of every assistance to the department.

No Federal Aid is extended except upon projects approved by the Bureau of Public Roads, and subsequent to the passage of the Federal act of 1921, it became necessary for the road department to designate the roads constituting its seven per cent. and to further designate of those roads the three-sevenths constituting the primary system and the four-sevenths secondary system.

Federal Aid is in fact actually available only after the completion of a project or the completion of units thereof, the result being that the State Road Department must always advance the funds necessary to the construction of the project upon which Federal Aid is later received. Estimates and vouchers are made up monthly by the department during the progress of the work, which go first to Mr. Morrison at Gainesville for approval, then to the Montgomery office for its approval and finally for approval and payment to the bureau in Washington. This process takes from six weeks to three months, during which time the State must put up the money or the work would of necessity stop. Just here it may be well to remark that at the present time Federal participation cannot exceed \$16,000 per mile. Under the first act the limit was \$10,000 per mile, while in 1919 it was raised to \$20,000 per mile, being reduced to the present figure of \$16,000 per mile in 1921.

The State Road Department is the only state agency recognized by the Bureau of Public Roads and through which it works. The bureau has rules and regulations upon which it insists in the carrying on of all construction. For example, all primary roads must have a minimum width of eighteen feet, and all bridges thereon must be at least twenty feet wide; the minimum requirements for secondary roads are roads sixteen feet in width and bridges eighteen feet in width. The department, therefore, in planning roads upon which Federal Aid is desired must make its specification comply with the requirements of the Federal bureau.

As the primary object of a State Road Department is a system of state roads, roads built with a view to serving an entire state, so the primary consideration with the Federal Bureau of Public Roads is a national system of roads which shall serve not alone a state, but the entire nation, giving to the country a complete and connected system of roads which will enable travelers to proceed from any section of the country to the other upon connected highways. Accordingly, the bureau regards as of primary importance those roads which from their location and the volume of traffic are interstate roads, and more readily extends Federal Aid on such roads than on roads which are merely connecting links within the state. It is the preference also of the bureau that all Federal Aid should be met with state as distinguished from county funds, and it does not encourage the participation of counties in construction of roads on which Federal Aid is extended, holding the state agency, the road department, responsible for the carrying out of the project agreements entered into between the bureau and the department. The result

is, as has been pointed out, that before undertaking work on which Federal Aid is to be extended, the department must have in hand a large capital to keep the work moving after its commencement. In fact, it is estimated that where the work is to be done by the State and the Federal Government (without county aid), if the project contemplates an expenditure of \$100,000, the road department must have in hand not less than \$75,000, in order to finance the work until the procedure necessary to get the estimates and vouchers approved and paid by the bureau is completed, a process, as formerly stated, taking usually about three months.

#### State Finances

In order to secure the benefit of Federal Aid, the state must, of course, pay its portion of the cost. To enable the department to take care of such construction as well as other construction and to extend state aid as outlined above, there is levied a state tax of one mill. Besides this, the department has for disbursement for these purposes 70 per cent of the net amount of all monies received from automobile licenses issued by the state, an additional five per cent. of that net revenue going for the maintenance of the department, and the remaining 25 per cent. being reserved for the respective counties in proportion to the amount of automobile license money collected from such counties. Two cents of the revenue derived from the three cent tax on gasoline is also directed by law to go to the state road fund.

#### Florida's 7 Per Cent System

As pointed out before, one of the tasks of the road department after the passage of the amendment of 1921, was to prepare and submit a map showing the 7 per cent of the total road mileage of the state on which Federal Aid was to be asked. This proposal was, of course, subject to approval by the bureau of public roads, and numerous objections and suggestions were offered by the bureau before an agreeable basis was reached. From the best information available, the total mileage of public roads in Florida is 27,558 miles. This includes all roads which have been opened by the county commissioners or are maintained by public funds. Seven per cent of that mileage is 1,885 miles, and three-sevenths of that mileage constituting the primary system is 787, the remaining four-sevenths being the secondary system of 1,098 miles. The map submitted, which has received the tentative approval of the district engineer shows the following as constituting Florida's seven per cent system:

#### Primary

Road No. 1—Pensacola to Nunez, sixteen miles.

Road No. 7—Pensacola to Flomaton, forty-four miles.

Road No. 2—Florida State line to Kissimmee, 239 miles.

Road No. 4—Georgia State line to Miami, 418 miles.

Road No. 3—Georgia State line to Jacksonville, thirty-one miles.

Road No. 6—Alabama State line to Marianna, twenty-one miles.

Road No. 10—Georgia State line to Tallahassee, eighteen miles.

Total, 787 miles.



### Secondary

Road No. 1—Pensacola to Jacksonville, 388 miles.  
 Road No. 2—Kissimmee to Haines City, forty miles.  
 Road No. 17—Haines City to Tampa, fifty-seven miles.  
 Road No. 24—Kissimmee to Melbourne, fifty-three miles.  
 Road No. 14—Gainesville to Hastings via Palatka, fifty-nine miles.  
 Road No. 13—Gainesville to Baldwin, forty-seven miles.  
 Road No. 21—DeLand to Daytona, twenty-four miles.  
 Road No. 5—Ocala to Fort Myers via Tampa, 236 miles.  
 Road No. 27—Fort Myers to Miami, 150 miles.  
 Road No. 3—DeLand to Orlando, forty-four miles.  
 Total, 1,098 miles.

The department stresses the importance of meeting standards of the Federal Government on all portions

of roads included within the seven per cent system, and endeavors to induce the counties to meet these standards when constructing roads within such counties which form a part of the seven per cent system. The bureau never permits a grade crossing or a right angle turn when the same can be avoided, and this is also for obvious reasons, the policy of the State Road Department.

If the people of this State will look abroad and understand the purpose and aims of the bureau of public roads—that it contemplates a nation-wide system of roads built according to specifications which make for the highest in road construction—that it contemplates a system which eventually will enable the traveler to proceed at ease from state to state on well connected and rightly located roads, they will get the proper conception of Federal Aid, which is not to benefit any particular section except incidentally but to spread a network of good highways throughout the length and breadth of the land.

## How to Maintain Dirt Roads

(From Colorado Highways)

In the columns of Colorado Highways there have appeared from time to time numerous articles on various methods of maintaining gravel, dirt, sand-clay and hard-surfaced roads. These articles have been printed for the information of those whose business it is to keep our highway system safe and smooth for traveling.

Officials of the state highway department are of the opinion that too much cannot be printed about the importance of maintenance, because only through constant study and the application of modern methods can our highways be kept in first-class condition to meet the ever-increasing use to which they are subjected.

The fact that modern road building and maintenance is in the experimental stage is fully appreciated by those in charge of this work in Colorado. To seek more light on these subjects and to profit by the mistakes and successes of our own state and others, is the constant aim of these officials.

For these reasons we herewith reprint an article written by K. C. Wright, resident engineer, and which appeared in a recent issue of Utah Highways, as follows:

The writer is cognizant of the fact that the methods set forth herein are radical departures from those now in vogue in the various counties. However, he is in strict accord with the following statement taken from a recent bulletin by Prof. William Peterson of the U. A. C. bearing on this subject:

"In general, maintenance is reduced as the quality and completeness of the work is emphasized in construction."

"Maintenance is the most important item of work to be considered in road management. It is always admitted that anything constructed for practical

utilization depends upon the amount of effective maintenance it receives. Therefore roads which are most widely used and exposed in all their parts to the worst of elements relatively should receive the highest degree of attention, and moreover the higher type of construction and the more it costs the more marked attention will it require."

Besides eliminating the difficulties and discomforts of travel, careful maintenance is the only way the road can be made to last long enough for the public to realize anything like a fair return on the money invested in the original construction of the road.

Quoting Prof. Peterson again:

"Money spent in roads, if not protected, depreciates faster than in any other legitimate expenditure that can be made. An earth road may be built at a cost of \$3,000 to \$50,000 per mile and if given no attention the investment will be entirely obliterated within five years.

"The question, when should maintenance on a newly constructed road begin, has been asked by several, the answer is definite and undebatable. Maintenance should begin a few days before the road is completed and very special attention should be given the road as soon as it is thrown open to complete use."

The following ten suggestions are given. If these suggestions are followed the result will soon manifest itself in better roads:

1. Inspect the road for its entire length during a rainy day and locate all holes, which will be easily noted as they will be filled with water.
2. Use the road drag immediately after a rain.
3. Fill all holes and depressions that cannot be evened up with the drag with good material and then go over the section again with a drag.



4. Never put on the road any sod, sand or any material from the side ditches. Obtain fresh material of the same character as the balance of the road.

5. When the road surface is very rough, run a spiked-tooth harrow over it while the road is still wet and this will very materially increase the efficiency of the drag.

6. In dragging the road, drag from the edges of the surfaced portion of the road toward the center. Be careful never to drag any material from the unsurfaced portion of the road into the surfaced part.

7. Be sure after dragging the road that no ridge has been left between any portion of the road and the ditch. At times a one-horse cultivator can be used to advantage in removing the ridge that may have formed between the wheel rut and the ditch. The drag should be used immediately afterwards to bring the surface of the road back into shape.

8. Remove all glass, tin cans, nails, and rubbish of whatever character that may be found on the surface of the roadway.

9. See that all culverts are clear, with outlets, and inlets in good order, and that the water can run freely in the ditches.

10. The old surface of the road must be cleaned and roughened before new material is added.

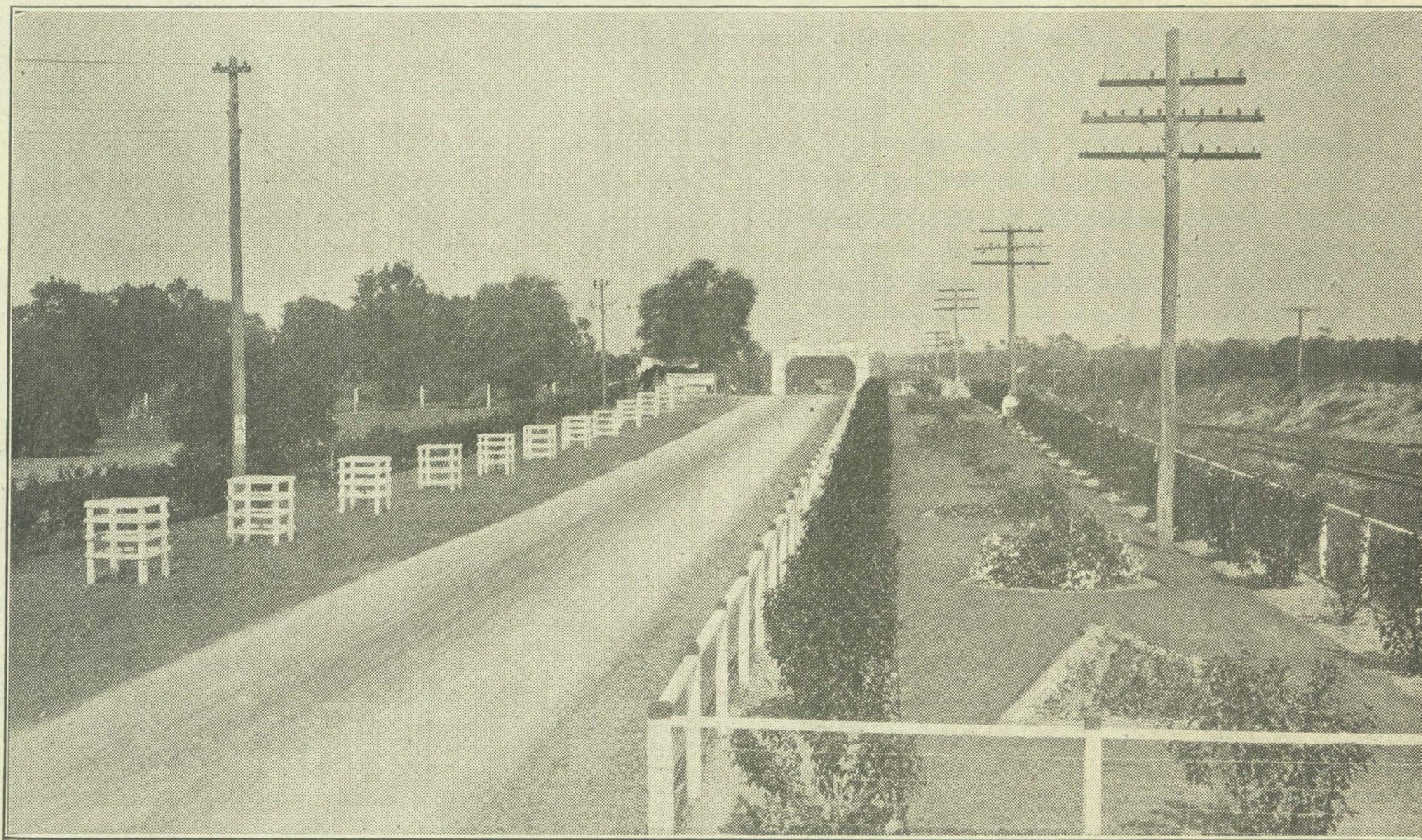
Too often the suggestions 3 and 4 above are not given proper attention. It is not possible to keep a road in good state of repairs by dragging only. Material wears out and must be replaced. Ordinarily from 200 to 300 cubic yards of gravel per mile per year should be added to the surface to keep it in a good state of preservation.

The patrol system of maintenance is the most effective system yet devised for maintaining roads, but as this system has not been adopted universally, the discussion of this subject will be limited to the system now employed, that of periodic repairs.

All common types of road, *i. e.*, earth, sand-clay and gravel roads are most effectively maintained by the same method, dragging. It matters not whether

(Continued on page 24.)

## Dixie Highway Entering Davenport

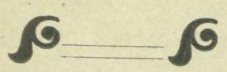


### An Example of Road Improvement and Beautification

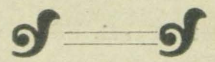
The above photograph is an excellent example of community pride in road improvement and beautification. The road shown is the Dixie Highway (Road No. 2) entering Davenport in Polk County, and is one of the links in the great system of highways constructed by that county which have made Polk renowned throughout the country as one of the leading counties of the nation in point of road improvement.

The picture also graphically depicts the further interest of the community in its roads in a well planned and executed programme of road beautification. The people of that section are keenly interested in highway beautification. In fact, Davenport will entertain the State Convention for promoting that movement in April, and the people there are doing everything in their power to beautify the highways in and out of that section.





## COUNTY DEPARTMENT



### GREAT CELEBRATION IN DADE CITY ON THE OCCASION OF THE COMPLETION OF PASCO COUNTY'S LINK IN STATE ROAD NO. 23

What is declared by many who attended to have been one of the biggest road celebrations in the history of the State, was staged at Dade City on November 21st to mark the occasion of the completion of Pasco County's link in State Road No. 23. The county was host that day to a crowd variously estimated at from seven to ten thousand visitors who came from practically every section of the State.

Under ideal weather conditions, hundreds of cars filled with county and municipal officials and interested citizens gathered at the northern and southern county lines to view the opening of the road to traffic. After a programme of music furnished by the Center Hill, Zephyrhills and Dade City bands, a series of two minute speeches were delivered, following which B. A. Thomas, chairman of the board of county commissioners, at the south line and County Commissioner C. A. Lock at the north line drove their cars against the barriers across the road and led the way toward Dade City where the celebration centered.

Further details of the festivities of the day are contained in the following clipping from the Florida Times-Union of November 23rd:

Music from the bands, singly and en masse, a bounteous barbecue dinner, short talks on good roads by former Mayor John W. Martin of Jacksonville, Frank E. Jennings of Jacksonville, both candidates for gubernatorial honors; James McCants and Charles H. Spencer, of Tampa, a well played football game between Pasco County High School and Sacred Heart College of Tampa, formed the program of the day. The last named resulted in a well earned victory for Pasco High, the score standing 19 to 6.

Features of the day were the large motorcades from Hillsborough county, led by the members of the Tampa Automobile Dealers' Association and having as its members Mayor Charles H. Brown and the city commissioners of Tampa, the Hillsborough County Commissioners and many other leading citizens. From Sumter County came another motorcade. One of the distinguished guests present was Congressman H. J. Drane of Lakeland.

The completion of this road across Pasco county leaves but sixteen miles of state road 23 in-

complete, throughout its length from Belleview to Plant City. Ten miles of this is in Marion county from Belleview to the Sumter county line, the remaining six miles is the notorious dark stretch in Hernando county. It is understood that both of these gaps will be built during the coming year. When this is done, the distance from Ocala to all principal South Florida cities will be shortened by some thirty miles over the route now generally used through Lake county to Auburndale.

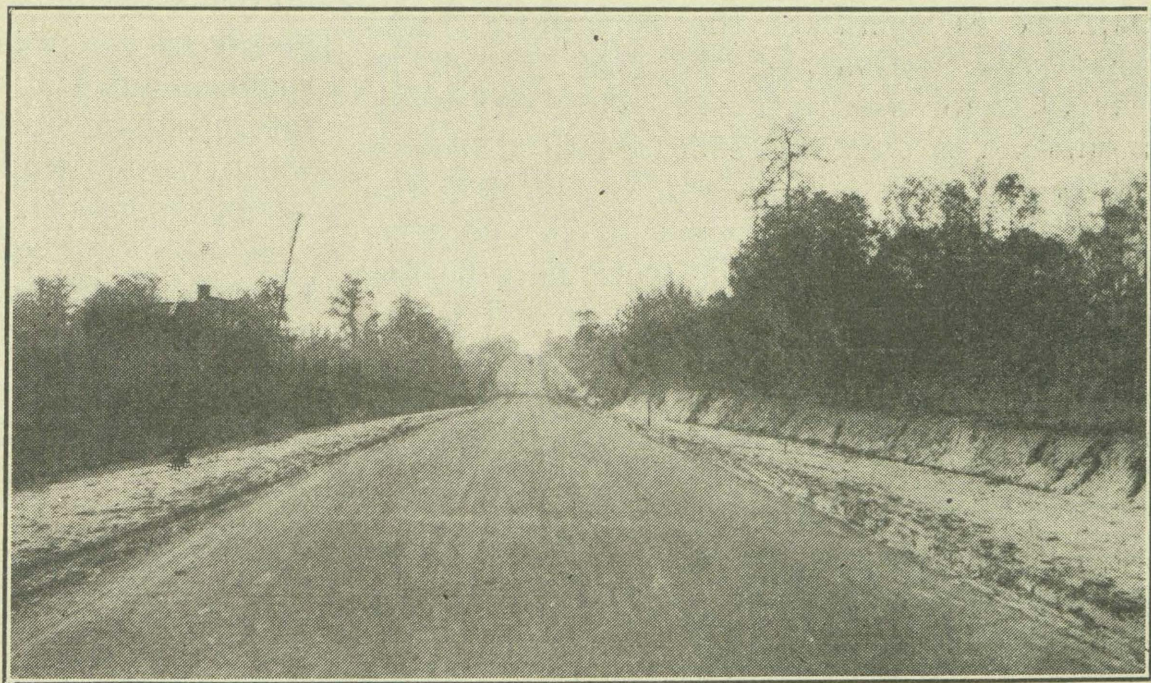
Other roads under construction, or for which bonds have been voted in Pasco county, will soon bring the mileage of good roads in the county up to the two hundred mile mark, at a cost of approximately two million dollars.

### BIDS ACCEPTED FOR ROAD CONSTRUCTION IN PALM BEACH COUNTY

At a meeting of the Board of County Commissioners of Palm Beach County held about the middle of November, bids for construction of seven new Palm Beach county roads and a bridge, at an aggregate cost of \$134,416.00 were accepted by the board. A considerable portion of the improvement will be done in the neighborhood about Salerno which was recently organized into Special Road and Bridge District No. 16. Included in the programme is a road which will connect Lake Okeechobee with the ocean, extending across part of the county.

It is understood, however, that in accepting the bids, the commissioners made it clear that contracts for the work will not be entered into until money is received from the sale of bonds issued against the improvements.

What it is expected will open up a large district in the northwestern part of the county and provide communication with the coast in the same manner as the Conners road will benefit the central section of the county will be the St. Lucie canal bank road. The \$32,500 bid of M. F. Meyers for building this road was accepted. This highway will extend along



A good example of Bituminous Macadam. Part of Federal Aid Project 33, in Alachua County.



the St. Lucie canal bank from the canal's intersection with the Jupiter-Indiantown road to Lake Okeechobee, a distance of about 61,000 feet.

More than twelve miles of new roads about Salerno were called for in bids accepted. The proposition of building roads one and two in this district for \$33,166 was accepted. Bids for building three other roads of the district totalled, \$28,500.

For construction of another road in the special district to be known as the Mulford road with a steel draw bridge across the south fork of the St. Lucie river the bid of \$38,000 of the Champion Bridge Company was accepted.

A proposed improvement calculated to bring much productive and settled land into closer communication with West Palm Beach is a draw bridge carrying military trail across the West Palm Beach canal for which the county engineer was authorized to prepare plans and specifications.

Another bid accepted was that of \$2,250 of M. F. Meyers for delivering 300 cubic yards of shell on the Zeigler road.

#### PROGRESS OF ROAD CONSTRUCTION IN ST. LUCIE COUNTY

According to a news story sent out from Fort Pierce under date of November 22nd, St. Lucie County expended the sum of \$23,240.00 for road work during the preceding month, the information being from the operations report submitted to the Board of County Commissioners by County Engineer E. H. Collins.

This sum was expended, the story continues, on thirty different projects and was for repairs, new construction, new equipment, maintenance of machinery, etc.

Included in the work of the month was eleven miles of asphaltic retreatment.

The engineer reports that the total cost of the two and a quarter miles of completed highway on the Okeechobee road was \$25,838, or at the rate of \$11,386 a mile. The average depth of rock laid was nine and three-fourths inches. He calls the attention of the board to the fact that additional funds will be required to complete the remaining 15.15 miles of this road, estimating the cost thereof at \$176,484, for an eight inch rock base, while the available funds amount to only \$61,760. So that around \$115,000 additional will be required to complete the job. He suggests that steps be taken at once to raise additional funds, in order that the work may be finished as quickly as possible so as not to delay the completion of the highway and to assure the completion of St. Lucie county's portion of the highway by the time that the interior counties complete their part of it.

This is the Fort Pierce-Tampa cross-state route, and regarding its importance the engineer says: "Competent authorities firmly believe that this road, when completed to Tampa, will be of more direct benefit to the whole of St. Lucie county than the Dixie Highway, for the reason that it will attract a larger class of desirable people who have some other object in view than that of reaching Palm Beach or

Miami." Bus lines serving Fort Pierce, St. Petersburg, Tampa and intermediate points will probably be established upon completion of the highway, he predicts and in a few years the traffic on this road will be heavier than that which the Dixie Highway now carries.

People sometimes ask: "What is a miracle?" If the State Highway Department should please everybody—that would be a miracle.—Times-Union. Some wise man said, "The day of miracles is past."—Ocala Star.

#### \$1,500,000 HILLSBORO COUNTY BONDS SOLD

The remaining half of Hillsborough County's \$3,000,000 road bonds were sold to Lehman Bros., New York, and associates at \$99.28 recently by the Board of County Commissioners.

The first half of the issue was sold in November, 1922, to a Jacksonville bank and Harris, Forbes & Co., of New York, who paid a premium of \$23,500.—Manufacturers' Record.

#### DUVAL COUNTY BID OPENING

On Monday, December 3rd, the County Commissioners of Duval County opened bids for the construction of approximately eighty-four miles of permanent highways in that county, and the bids received, according to a statement attributed by the press to Col. C. S. Coe, county engineer, were among the most reasonable and consistent ever submitted for road building in Florida.

This construction is under the programme made possible by the county bond issue of \$2,550,000.00 authorized by the county electors earlier in the year. The roads covered are the following: St. Augustine road, Atlantic boulevard, Kings road, Main street road, Orange Park road, Moncrief road, Edgewood avenue, Baldwin-Maxville road, San Jose boulevard, First street, Neptune, Third street, Neptune.

That great public interest was taken in this opening was indicated by the fact that one of the largest audiences ever attending a meeting of the county board in its present quarters, completely filled the room, about 150 representatives of engineering firms interested in the bidding being in attendance. There were twenty-two bidders submitting proposals on the various projects.

At the time of going to press with this issue of Florida Highways, announcement of awards of the contracts had not been made.

#### ROAD WORK PROGRESSING IN HIGHLANDS COUNTY

News comes that work is going steadily on at the various sections of the north and south road through Highlands county, and the Lake Annie road east to the Kissimmee river, as well as the lateral roads now building. There is a gap of only a little over two miles between Avon Park and Sebring, and about four miles between Sebring and Josephine creek,



where the state takes on a stretch of five and a half miles, carrying it to the hard road from Lake Stearns to Lake Annie.

From Lake Annie, east, the clearing of the right-of-way and grading is proceeding rapidly, and the dredge is speeding up its work in the marsh with a double shift. The leveling down of the spoil bank is going ahead very satisfactorily, and it is now possible to drive to Buck Island.

The county commissioners recently decided to push the early completion of the cross country road from DeSoto City to Bassenger thus to cooperate with Okeechobee, which is willing to put its road in excellent shape from Okeechobee City to the Kissimmee river crossing at Bassenger. This would make the through connection from State road number eight at DeSoto City to the other portion of this State road where it leads from Okeechobee City to Fort Pierce. This outlet from Sebring to the East Coast would not be entirely hardsurfaced, but would be put in such excellent condition that travel would prefer it in crossing from coast to coast, rather than make the long trip to the north of this route, which is now necessary.

### ROAD BUILDING IS A BIG BUSINESS

Road building belongs close to the top in the list of big businesses in the United States. The latest estimate compiled by Thomas H. MacDonald, chief of the U. S. Bureau of Public Roads, shows that during 1923 approximately 40,000 miles of surfaced roads will be completed.

The 1922 construction program approximated 37,000 miles, divided as follows: 6,000 miles of pavement such as brick, concrete, sheet asphalt and bituminous concrete; 4,000 miles of macadam, water-bound and bituminous; 20,000 miles of gravel and 7,000 miles of sand-clay and top-soil roads. The classification of this year's 40,000 miles will be about the same.

At the beginning of this year there were about 400,000 miles of improved surfaced roads in existence and, at the present rate of progress, this mileage will be doubled in 10 years.

One of the most important factors in the great movement for more and better roads which has resulted in the construction of improved highways at the rate of 40,000 miles a year is the American Road Builders' Association which was organized more than 20 years ago and which holds an annual convention and road show. The 1924 convention and show will be held in Chicago, the convention at the Congress Hotel and the show at the Coliseum from Jan. 14 to 18 inclusive. The sessions of the convention will be open to men identified with and interested in highway work and will attract men from every part of the country. At the show in the Coliseum, all of the latest and approved appliances for road construction will be on exhibition. The officers of the association are: President, Frank Page; secretary, E. A. Birchland, and treasurer, James H. MacDonald. The members of the executive committee are: Frank Page, chairman; S. T. Henry, James H. MacDonald, William R. Smith and T. J. Wasser.

The need for road construction at so rapid a rate as 40,000 or more miles a year is emphasized by Mr.

MacDonald who says that highway building should be continued as fast as the physical limitations of labor and material will permit. The longer the job is delayed, the greater will be the ultimate cost to the people. The reason is that the traffic on the main roads has now become so heavy that the excessive cost of operating motor vehicles over bad roads outweighs the cost of constructing good ones.

Referring to one of the more heavily traveled roads of the country—the Boston Post road from New York to Boston—Mr. MacDonald shows that if the road were a dirt road instead of a paved road, as it is, the greater cost of the motor truck traffic alone would pay for a paved surface in about 11 years. If the tremendous passenger car traffic were considered, the operating saving would pay the construction cost in a much shorter period.

To illustrate the pressing need for all possible speed in the improvement of roads, Mr. MacDonald cited the tremendous growth of motor vehicle registration. By July 1 of this year, the number of motor vehicles traveling the highways had increased to more than 13,000,000, as compared with 1,711,339 in 1914. How directly the highway touches the lives of all the people is shown by the fact that there is now more than one motor vehicle for each 10 people. By just a little crowding the whole population could be taken for a ride at one time.

The Federal Aid highway system which will shortly be approved in its entirety is indicative of the determination of the American people to have a highway system consistent with the demands of the traffic. The system will include nearly 180,000 miles of the most important roads of the United States, so located as to form a complete network of main interstate and intercounty roads. When completed, it will tie together practically every city and town of 5,000 population or greater and a 10-mile zone on each side of the road will include the home of 90% of the people. To encourage the early completion of this system, all Federal appropriations will hereafter be spent only on roads which form a part of the system.—Highway Engineer and Contractor.

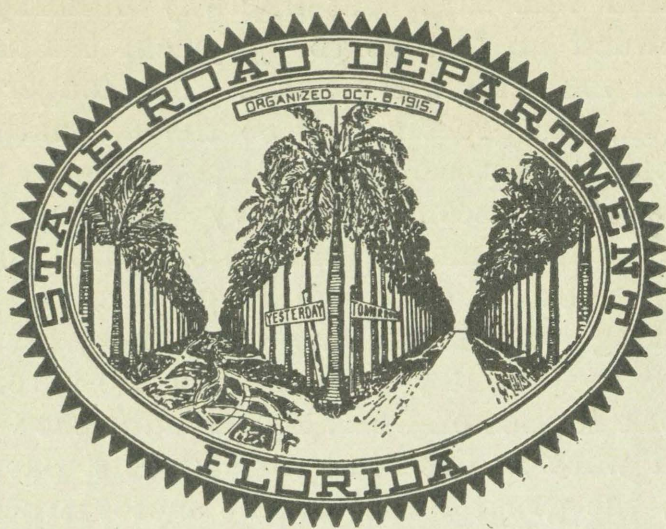
### FLORIDA ROAD AND BRIDGE PROJECTS

Road building and road improvement continue to be the leading class of construction in West Florida. In addition to the recently completed Pensacola Gulf Beach Highway, costing over \$400,000, which runs from Pensacola to the Gulf of Mexico, seventeen miles away, there are other road-building projects now under way. Advertisements have been placed for bids on a large parking space at the terminus of the Pensacola highway, the cost to be between \$27,000 and \$48,000.

Construction will soon begin on Freedom Bridge, the last bridge link of the Old Spanish Trail in Florida. Bids will be called for on December 11 for constructing the west approaches. The principal items included are clearing and grubbing of two and one-half acres; 2450 yards common excavation; one pile trestle bridge sixty-four feet long; and one pile trestle bridge thirty-two feet long. This bridge is being built jointly by two counties.

The Board of County Commissioners of Escambia





## Florida Highways

Published Monthly  
Official Publication of the State Road Department

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B. A. Meginniss, Attorney for the Department,  
Editor and Business Manager

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❧ Florida Highways Wishes its Readers  
and Advertisers a Merry Christmas. ❧

## Editorial

### "TWO-STAGE CONSTRUCTION OF PAVED ROADS"

Elsewhere in this issue we print an excellent article from Utah Highways under the above caption. The article in question so adequately covers the subject, and the advantages therein pointed out are so applicable to our own state, that we commend it to the thoughtful consideration of our citizens.

Briefly stated, two-stage construction contemplates the construction of a standard base or foundation on a permanent basis, the grade and alignment requisite for a paving foundation and the installation of permanent drainage structures. The second stage in the process is the laying of the permanent wearing surface which follows when the traffic needs require it, the base being protected meanwhile and the road made temporarily complete by a surface treatment.

This plan, adopted in Florida, would mean increased mileage in improved or hard-surfaced roads. It is not a wasteful policy, but on the other hand is the building of a permanent road as far as it goes. The standard eight-inch compacted rock base is laid, the drainage structures are put in, the road is properly and permanently located, and is fully completed except for the laying of the permanent hard-surface, which is always the most expensive feature of such a road. The policy also makes it possible for the State Road Department to make use at the present time of local products of Florida rock.

Wherever this plan is carried into effect it will be the policy of the Department to maintain the temporary wearing surface as long as it appears expedient and economical to do so, and to complete the road whenever the traffic thereover demands the hard surface. Experience has proven that this surface treatment will adequately protect the base for a number of years, and will provide in addition an excellent road until the permanent paving can be laid.

It is manifestly impossible for the State Road Department to build completed high type paved roads on all the sections of the State system needing attention. In some instances, it appears expedient and economical to construct such high type roads on account of local conditions, and in some cases because the projects have been made Federal Aid and the counties put up the funds necessary to meet this Federal Aid, thus avoiding the expenditure of any considerable amount of State funds.

To reiterate, the plan wastes no money—everything in connection with the road is of a permanent nature as far as it goes, so that when funds are available, it only becomes necessary to lay the permanent wearing surface in order to make the project a completed permanent paved road.

Wherever this plan has been adopted it has proven its value and is rapidly becoming a recognized and established policy in road construction throughout the nation.

A total of \$91,653,149.69 was expended by the Federal Government on Rural Post roads in 1922.—Colorado Highways,



## A FURTHER DECLARATION OF PRINCIPLES

By some regrettable, but unexplainable misfortune, the three concluding paragraphs in our foreword or salutatory which appeared in the last issue under the head "By Way of Salaam," were omitted from the published magazine.

These paragraphs were as follows:

"A word in advance to forestall any possible misunderstanding. FLORIDA HIGHWAYS will be published without expense to the Road Department or to the taxpayers of the State. It is, from its inception, a self-supporting publication. Going as it does into every nook and cranny of our State, and to every state in the Union, it will furnish an advertising medium of no mean value, and the cooperation of those representative individuals and firms which appear in our advertising pages, makes it possible to publish the magazine without expense to the Department or State.

"A final word. FLORIDA HIGHWAYS is for Florida—all Florida. We believe that we can, and it is our purpose to make it, a tremendous factor in placing before the people of the Nation the resources, the beauties, the possibilities and the grandeur of our State. The text, the illustrations, and the ideas advanced will be in furtherance of the idea of assisting towards an even greater and more glorious Florida.

"It is our earnest hope that we may merit your approval and cooperation."

These paragraphs we regarded then, and still regard as a most vital part of the editorial in question, and we have already had occasion to regret their omission. One of the influential dailies of the State has criticized our venture most severely, and that criticism is apparently based in major degree upon the erroneous assumption that the magazine is being published out of funds derived from taxation. As a matter of fact, as stated above, not one cent of the cost of its publication or maintenance comes out of Department or tax funds—our advertisements make the magazine independent and self-supporting. The same daily advanced the further suggestion and criticism that the periodical is published to create a new remunerative position. This conclusion is also erroneous. It is published under the sole direction of the attorney for the State Road Department who receives no compensation from the Department for the additional work involved in its publication. As to whether or not the magazine is in any sense "propaganda" for any person or set of persons, or for any cause, other than in the interest of good roads in Florida, we must leave the contents of the magazine to speak for itself, and we confidently submit it as the best evidence on that subject.

We also observe that another daily, while approving the idea of the publication and its appearance and make-up, takes us to task because we have accepted advertisements from dealers in materials and equipment and the like, and actually advances the belief that it would have been better, if we desired to publish a magazine, *to support the same with Department funds*. Personally, we agree with the first editor that we would be liable to just criticism if we used one cent of funds which might be spent on road

construction for the publication of a magazine, but unfortunately for his case, WE DON'T—AND WILL NOT.

## THE COST OF GOOD ROADS

Boston Transcript.—Good roads cost money. But they are not the only things nor the chief things that contribute to the increasing burden of taxation and of state debts. It is true that burden is increasing rapidly, even ominously. United States census returns indicate that the total expenditures for state governments have doubled since 1919 and have quadrupled since 1913. That is a record which should receive the very careful and thoughtful consideration of economists. Instead of thinking principally of new objects of taxation and new ways and means of raising revenue, it might be profitable to give more thought to possible reduction of expenses, at least to lessening the rate of their increase.

Taking a superficial view, some seem inclined to throw the blame chiefly upon road-building, and even to suggest that the improved roads are largely a luxury, for indulgence in "joy-riding." Thus the periodical called The Budget, published by a "National Budget Committee," points out that in thirteen scattered and representative states from which the census reports have been received the indebtedness incurred between 1917 and 1922 for road construction was more than enough to double their entire indebtedness; "and the movement to build highways is hardly launched."

Therefore it forbodes a time near at hand when a quarter of the state budgets will be for paying the interest on "a debt which is being incurred largely for travel convenience and pleasure."

But good roads are not primarily a luxury; they are a necessity. They are constructed not chiefly for convenience and pleasure, but for business and profit. Expenditure for them is, from the most obvious point of view, to be classed in the same category with appropriations for police and fire and sanitary service, for water supply, and for schools.

Moreover, it would be unjust to ignore the extent to which motor vehicles are directly paying for road construction and maintenance. The census returns cited show that in the six states of Maine, New Jersey, Ohio, Illinois, Minnesota and Colorado—all from which complete returns have yet been received, and widely distributed and representative of the country as a whole—the population is 20,251,229, and the cost of roads in 1922 was \$53,000,000, or an average of \$2.61 a head. In the same states the total cost of state government—exclusive of municipal government, which was still more costly—was \$12.30 a head, the road cost thus being little more than one-fifth of the whole. But in this state of Massachusetts, with, say, 3,900,000 population, in the first nine months of this year motor vehicles paid in registration fees and driving licenses \$6,660,140. That was \$1.70 a head of the population, or almost two-thirds of the total cost of roads in the six states cited. If to this we add the personal property tax that is levied upon vehicles, it is quite probable that motor vehicles are paying directly to the state more than the states are spending for roads; leaving as clear profit to the state all the enormous gain to industry, commercial



and real estate, which the roads produce, and the consequent increase of assessable valuation and tax revenue.

Extravagance in road-building is to be condemned as certainly and as severely as extravagance in any other department of government activities. It is legitimate to inquire whether the work of road-building is being properly done, and to make sure that the states are getting a dollar's worth of road for every dollar spent. But it can scarcely be maintained that as a whole the states are now appropriating too large a proportion of their budgets for this prime, fundamental necessity of social, industrial and commercial life.

### PLANS FOR NEXT MONTH

It is our earnest desire to make each issue of Florida Highways more interesting than the last. With this thought in mind, we call the reader's attention to two features which we expect to begin with the February issue.

The first of these is a tabulation showing the status of road contracts now being carried out in the various sections of the State. In this department we shall show the project, the mileage, the name of the contractor, the contract price, and the present status of the work, that is to say, what percentage is completed. This will include both State and Federal Aid projects and will enable citizens at a glance to see just how the work of the Department in road construction is progressing.

Another department which we purpose beginning is one dealing with Highway Beautification. The present State Highway Engineer has given this matter a great deal of serious thought and has worked out a tentative plan looking to the accomplishment of this important result. Mr. Karl Lehmann, of Orlando, whose work along this line has been so well recognized throughout the State, has generously consented to co-operate with us in this matter, and will prepare articles for publication dealing with this important subject.

These are two of the matters we have in mind for the improvement of the magazine, and we hope to announce other features from time to time.

### WE EXPRESS APPRECIATION

Florida Highways is deeply grateful for the many kind expressions which have appeared or which have been received relative to its first issue. Letters from prominent men all over the State have poured into our desk, commending our venture and expressing approval of the first issue. Editorial comment in the leading newspapers of the State has likewise in the main been of a commendatory and complimentary nature.

We desire to extend our hearty thanks to all those individuals and newspapers who have expressed their approval. We wish that we might reproduce many of the fine things which have been said of our publication, but lack of space makes that impracticable. It is our earnest hope that we may merit the approval and confidence of the people and of the press of the State.

### IS IT SOUND BUSINESS?

North Carolina is completing an average of about three miles of hard-surfaced highways every working day. Two or three other states are putting money into improved highways just about as fast. Several million dollars of capital are being tied up daily by the road-building program of the country. We are going ahead with such work at a pace that is hard to grasp. Many keen, experienced men have lately begun to ask, "Is it sound business?"

Only a few of those who are directly interested in the continued expansion of highway building have sensed this questioning by people who will sooner or later have to be answered with facts, and not theories. Generalities are not going to get anywhere when the showdown comes. The only argument that will count will be tangible facts that will prove that a sufficient direct return is being earned on the investment to pay the interest and retire the bonds.

Thus far very few concrete facts have been assembled showing state-wide or nation-wide actual savings or earnings directly due to road improvements. Any good roads enthusiast can spout by the hour in generalities. Little evidence that will pass muster in the coming fight has thus far been brought to light. There is plenty of such evidence; it simply has not been assembled and presented.

For example, in North Carolina very accurate figures show that the gasoline consumption per motor vehicle in the 1921 fiscal year averaged about 510 gallons. In 1922 this has been reduced to 450 gallons. The reduction this year is expected to be more. It would be safe to credit a saving of at least 60 gallons for each of the 225,000 motor vehicles in the state to the road improvements made in the meantime. At current prices this amounts to about \$3,300,000 a year, which is over \$500,000 more than the entire annual present cost of highway maintenance in the state.

Throughout the nation improved highways are earning similar vast direct earnings. Men who have closely studied the facts know that money properly spent in improving highways shows a quick, handsome return. The time has come to begin to assemble the sort of facts that will be accepted as evidence that our tremendous highway improvement program is financially sound.—"Successful Methods."

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## U. S. Makes Study of Traffic

What the United States Government is doing through the Bureau of Public Roads to solve the many new problems caused by the increased use of highways by rapidly moving vehicles was explained by Henry C. Wallace, Secretary of Agriculture, before the American Automobile Association at New York City, on May 22.

He declared that the development and use of automobiles had changed many notions about road building, and that the government had been compelled to adopt scientific methods in the administration of the Federal Road Act. The vast sums of money being spent by the government and the states make it necessary, he said, that officials attack the road problem vigorously in order to avoid enormous waste.

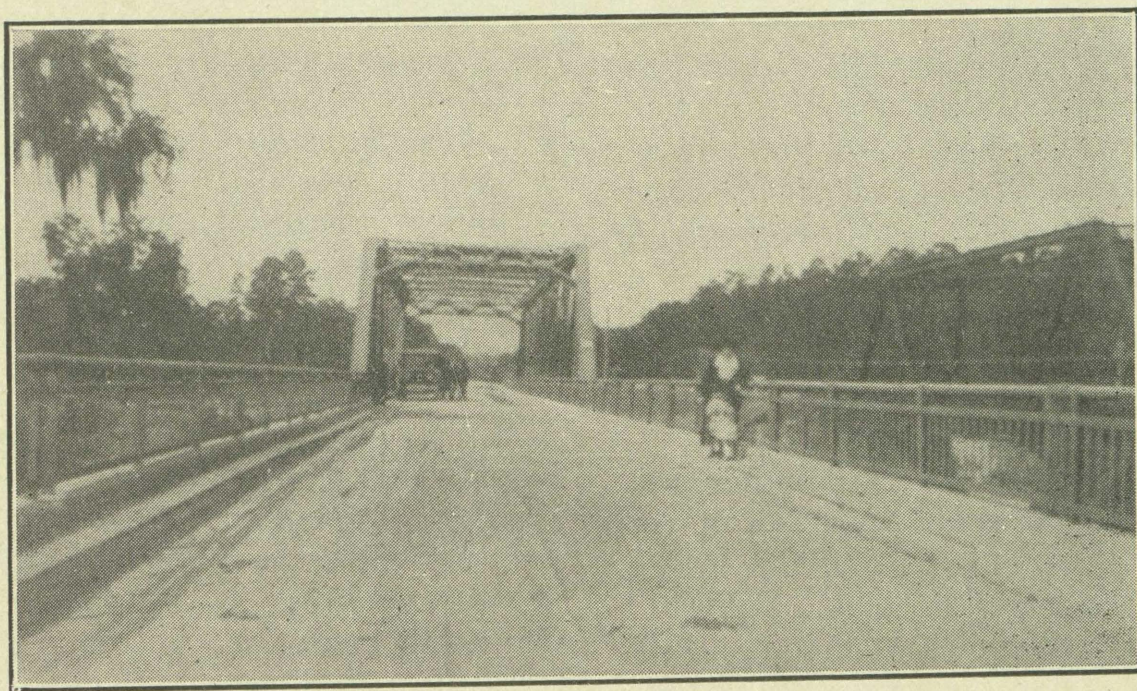
"Successful and economical road building more and more is becoming dependent upon careful scientific research," said Secretary Wallace.

Roads must be adapted to the density and character of the traffic. In rural sections where the roads are used mainly for moving farm products to market and for tourist travel, the building of a road that will stand up is a very different matter than in regions where there is a heavy traffic of freight-carrying trucks. Conditions of soil and climate, of rainfall, drainage, temperature, all must be studied. The sort of road-making material available and its suitability to the character of the road needed must be ascertained. How best to use this material is a matter of scientific determination. The funds available

for road improvement without imposing unduly heavy tax burdens must be considered. Surfacing material must be determined with relation to traffic.

"The Department of Agriculture is making careful study of all such matters, as well as a number of others concerning which information is needed if we would build our roads wisely. We are conducting inquiries into the traffic-carrying capacity of the sand-clay and top soil roads in the Southern states. Field parties are studying gravel roads in the Northern states and trying to ascertain why in some sections gravel wears more rapidly than in others, and what can be done to prevent them. We are developing and standardizing tests for sub-grade materials and their treatment. We are inquiring into methods of drainage and developing most interesting information. Our engineers are investigating the matter of paving designs and are conducting careful impact tests to secure information on the load-carrying capacity of road slabs in different designs and the behavior of surfacing materials under varying conditions of traffic.

"The character and density of road traffic has been changing so rapidly that no one can speak with full authority as to the best methods and type of road construction. The whole question is one for persistent and continued scientific study, and it is the expectation of the department to extend this study just as rapidly as its funds permit and the results seem to justify."—Colorado Highways.



Bridge over Suwannee river at White Springs, on Road No. 2. This bridge has been dedicated to the memory of Hon. Ed. Scott, first chairman of the State Road Department. Mrs. Scott and little daughter are standing in the foreground of the picture.



## FEDERAL TAXES AND ROADS

Federal revenue derived from taxation of motor vehicles and accessories since 1917 has been more than twice as great as the amount expended by Federal government for road construction, Secretary of Agriculture Henry Wallace told the Investment Bankers' Association recently.

Automobile and tires and accessories bear a tax of 5 per cent and motor trucks 3 per cent. Up to and including the fiscal year of 1923, the Federal government collected \$589,012,021 in taxes from these sources. During the same period, expenditures of the government, on account of Federal Aid highways and forest road construction, together with all administrative outlays, amounted to but \$264,782,216 or 45 per cent of the amount collected directly as taxes from the user of roads and from those who are most benefited by highway improvements.

Automobile revenues for the fiscal year June 30, 1923, were \$146,000,000, and withdrawals from the Treasury for Federal Aid highway purposes were approximately \$72,000,000.

"This clearly indicates that owners and operators of motor vehicles on highways are bearing more than double the entire Federal expenditure for roads," said Secretary Wallace.

In discussing methods by which States may raise money to match Federal Aid funds, Secretary Wallace stated that they have the option of the pay-as-you-go plan, or the bonding or deferred payment plan or a combination of the two.

"The advantage of the bond plan is that it makes funds immediately available for highway construction," he explained. "The disadvantage is increased cost of the roads due to interest charges. Credited against this interest cost must be the service that the road will give for an estimated period of years between date of its actual construction under a bond issue and date of its probable construction under a pay-as-you-go plan. The question is not merely whether a community shall incur a debt; it is also a question as to whether the maximum efficiency and the full development of the public wealth will be best promoted by using public credit."

Secretary Wallace believes that the backbone of a state's trunk line system should be completed at once, the rate of construction depending only on the available supply of labor and materials. He bases this conclusion on the greatly increased use of principal highways by automobile and motor truck, a use so extensive that people pay in their operating expense a sum sufficient for adequate highways whether they have them or not.

(Continued on page 24.)

## STATES APPROPRIATE LARGE SUMS FOR HIGHWAY WORK

Last year 82,000,000 square yards of asphalt highways were constructed in this country, according to reports received by the Asphalt Association of New York.

These reports also show that bond issues for highway construction authorized from Aug. 1, 1922 to Aug. 1, 1923, amounted to \$617,029,537, exclusive of Federal Aid. This included bonds issued by states, counties, townships and road districts.

"For some time," said J. E. Pennybacker, secretary of the Asphalt Association, "among good roads advocates the opinion has prevailed seemingly that the public demand for improved roads is not now as great as in previous years. That the exact reverse is the case is shown by the investigations we have made.

"Not only is the demand for good roads increasing practically everywhere, but there is a much greater demand for the finest types of hard surfaced highways."

Bond issues authorized during the year in the various states, exclusive of Federal Aid, were as follows:

Alabama, \$6,605,000; Arizona, \$2,610,000; Arkansas, \$6,416,000; California, \$33,150,314; Colorado, \$6,000,000; Connecticut, \$125,000; Delaware, \$10,240,000; Florida, \$35,493,000; Georgia, \$1,005,000; Idaho, \$425,000; Illinois, \$123,638,000; Indiana, \$5,877,996; Iowa, \$17,435,000; Kansas, \$1,582,062; Kentucky, \$5,987,000; Louisiana, \$9,813,100; Maine, \$916,000; Maryland, \$4,658,000; Massachusetts, \$628,000; Michigan, \$9,564,250; Minnesota, \$19,311,679; Mississippi, \$5,325,000; Missouri, \$15,634,999; Nebraska, \$1,020,000; New Jersey, \$24,300,000; North Carolina, \$25,540,000; New York, \$5,990,000; Ohio, \$8,719,000; Oklahoma, \$4,915,000; Oregon, \$8,-

868,000; Pennsylvania, \$159,398,000; Rhode Island, \$805,000; South Carolina, \$5,611,000; Tennessee, \$984,000; Texas, \$18,406,500; Virginia, \$4,096,493; Washington, \$819,000; West Virginia, \$16,197,665; and Wisconsin, \$7,464,000.—Exchange.

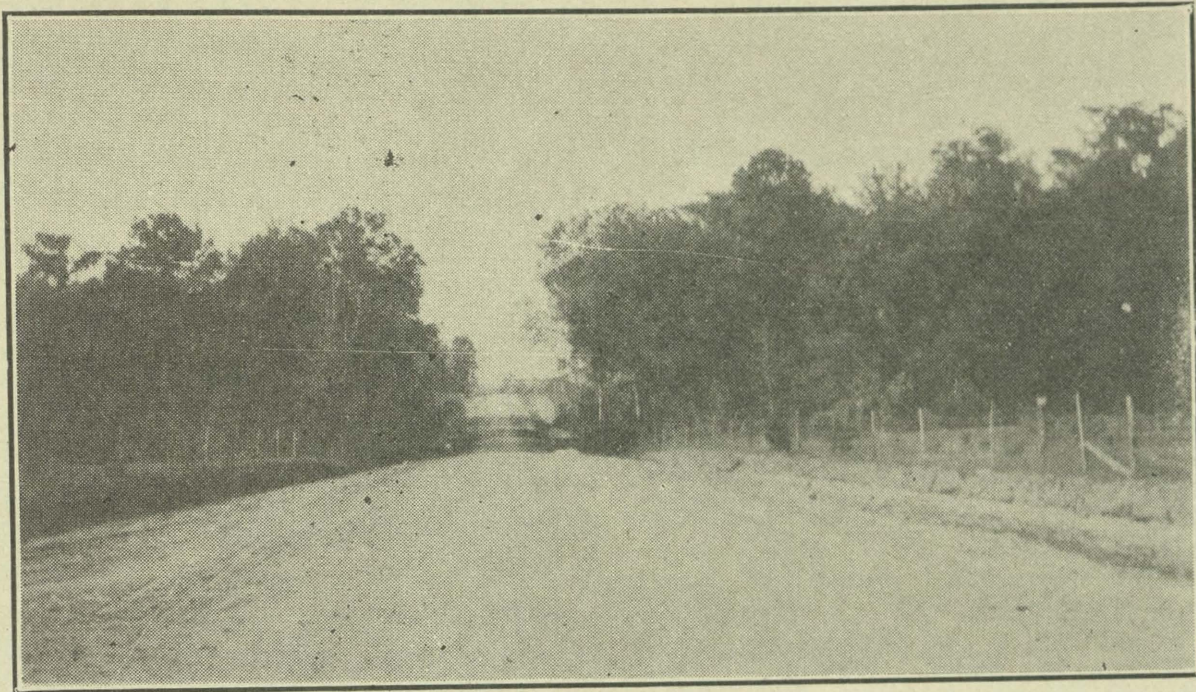
## "MAINTENANCE"

(By A. B. Collins, Resident Engineer)

**M**aintenance of improved roads is often neglected. As a result costly improvements have gone to ruin. Insufficient funds for Maintenance is often to blame. No financial oversight can be more disastrous than failure to provide for our improved highways. The character and volume of traffic determine the type of road to build, provided adequate Maintenance is assured. Economy, therefore, can be had only when proper Maintenance is guaranteed. No part of highway work requires more skillful supervision than Maintenance. A slipshod method of Maintenance will ruin the best of roads. Nowhere is there a greater field for application of sound business principles than in public highway Maintenance. Constant attention to detail, combined with close study, produces efficiency. Efficient Maintenance, the secret of public highway success.—Exchange.

The time has gone by when states can afford to have a myriad of motorists seeking blindly to find their way. It is expensive, it is unnecessary and it produces a loss of time, money and moves not compatible with modern progress.—Highway Engineer and Contractor.





Sand-Clay Surface Road No. 2, Hamilton County. This section of road has remained in good condition in all kinds of weather.

## The Danger of Grade Crossings

The following is an excerpt from an excellent article by Robert Gibbs Thomas, Engineer in Charge of Records, South Carolina Highway Department which appears in the Highway Engineer and Contractor:

It is reported that out of 12,000 persons killed on the highways of the country in one year (1921) 7,000 were struck at grade crossings. Investigation has shown that one motorist in every three is careless at grade crossings, approaching the railroad tracks at reckless speed and not taking due notice of approaching trains. On one system alone during three years 1,099 motor cars and trucks were wrecked at grade crossings. In 490 cases—more than 20%—the motorists ran into the trains. In 122 instances autos broke through the crossing gates. Nine crossing flagmen were struck down.

In 970 cases in which motorists ran in front of trains, 136 persons were killed and 405 were injured. In 490 cases motor cars stalled on the crossing and were demolished. Also 43 cars actually collided with the danger signals.

In addition to the 12,000 persons killed on the highways in 1921, there were 1,500,000 non-fatal injuries.

There were 14,000 persons reported as killed in automobile accidents in 1922. It may be noted that the number of automobiles and trucks registered in the United States in 1921 was 10,464,005, and 12,339,114 was the number in 1922. The increase in the number of fatalities in one year was thus almost proportional to the increase in the number of motor vehicles.

It is manifest that the total elimination of railroad grade crossings is the ideal remedy for present conditions. Many crossings may be eliminated and where not removed, much can be done to reduce the hazard to traffic at such crossings. Grade crossings will be eliminated by re-location wherever possible or replaced with bridges or underpasses on all roads of the Federal Aid highway system to be constructed

under the Federal Highway Act, the U. S. Bureau of Public Roads announced more than a year ago. This policy has received the approval of state and railroad officials and has been endorsed by the American Association of State Highway Officials.

Important roads, many of which at present cross and recross railroads at grade, will be relocated entirely on one side of the railroad, even though the change increases the cost of construction. If crossings are unavoidable or justified by local interests, the road will be designed to pass under or over the track, the railroads, in most instances of this kind, bearing half the cost of making the underpass or building the bridge.

As a result of the grade-crossing provision of the Federal Highway Act, a great number of eliminations have been effected and more are to follow.

When a railroad grade-crossing cannot be eliminated, the hazard at the crossing can be reduced by providing a clear sight of the crossing for 500 ft. on each side and a clear sight of the railroad for 1,000 ft. on each side of the highway will still further reduce the hazard. For at least 100 ft. each side of the railroad the grade of the highway should be level or not over 2 ft. rise or fall in 100 ft., and the width of the roadway crossing the railroad should not be less than 20 ft.

During the year 1921-22 there were eliminated on the roads of the state system in South Carolina 45 railroad grade-crossings, and for 1922-23 the plans provide for the removal of about half as many more.

### *Adequate Maintenance*

Many hazards may be obviated by proper maintenance of the highway. On earth or gravel roads the prevention of the formation of excessive amounts of dust will reduce the hazard due to the dense clouds of dust obscuring the vision of the motor driver. To maintain roads in their normally safe condition requires constant care. In general, eternal vigilance is the price to be paid for roads always good.



## Our New State Highway Engineer

Since the last issue of Florida Highways, James L. Cresap, who has been connected with the State Road Department since October, 1917, has been elected State Highway Engineer to succeed William F. Cocke, who resigned in August. Mr. Cresap's long record of distinguished service with the Department justifies the belief that he will continue to serve in his new position with the same loyal and conscientious spirit which has characterized his work in every position which he has held.

He is a native of Tennessee, and received his academic and engineering education at the University of Tennessee. He has held many positions of trust and honor, in each of which he has reflected credit upon himself. Among the many connections he has had are the following: Engineer in charge of construction work for the Southern, Interstate and Virginia and Southwestern railways; City Engineer of Humboldt, Tennessee; County Engineer of Haw-

kins County, Tennessee; Resident Engineer and Division Engineer for the Virginia State Highway Commission; Resident Engineer, Superintendent of Convict Labor and Assistant State Highway Engineer of Florida from October, 1917, to the present. His service as Assistant State Highway Engineer commenced April 1st, 1920, and continued until August 8th of the present year when he was named Acting State Highway Engineer on the resignation of Mr. Cocke.

Mr. Cresap is the oldest official of the State Road Department in point of official service, and his long connection with the same and his intimate familiarity with every project and detail of the work in Florida make him the logical man for the position. Those who know him best are confident that he will render to the State of Florida distinguished service in his new connection.

### ROADS PRESENT AND TO COME

Government interest in and contributions to good road building is unalloyed statesmanship. All government of an enlightened character now seeks to promote trade—to encourage and facilitate business in every legitimate way. Prosperity depends on business. Thrift and industry alone breed content, and a people can be contented only with full opportunity to thrive righteously.

Materialism is condemned by many idealists, but only on the material can spiritual growth occur. Things physical may not be neglected lest spiritual truth be obscured. Food, clothing and shelter are the first necessities. When they are secure the soul may revel in its finest manifestations, but hardly before. The man who devotes himself to spiritual things while his family goes hungry and ragged,

is a fraud. The enemy of property, of profits, of wealth, is an enemy of all progress, because upon the business of the world rests all its good things.

Industry which produces wealth, and wealth which in turn affords opportunity for industry, are natural evolutions of creation. All intelligent men know how essential transportation is to business and to prosperity. Elimination of waste by good roads is a self-evident proposition, and if there is any one certain fact in the affairs of civilization, it is that our public roads from now on should be built to carry a vast traffic. Motor transportation will grow to prodigious proportions, but the roads must come first. They are now to general business what power is to the factory, the building to the merchant, the courts to law—that is, the place where things can be accomplished.—Gallipolis (O.) Tribune.

## Contracts Awarded by the Department, December 7th

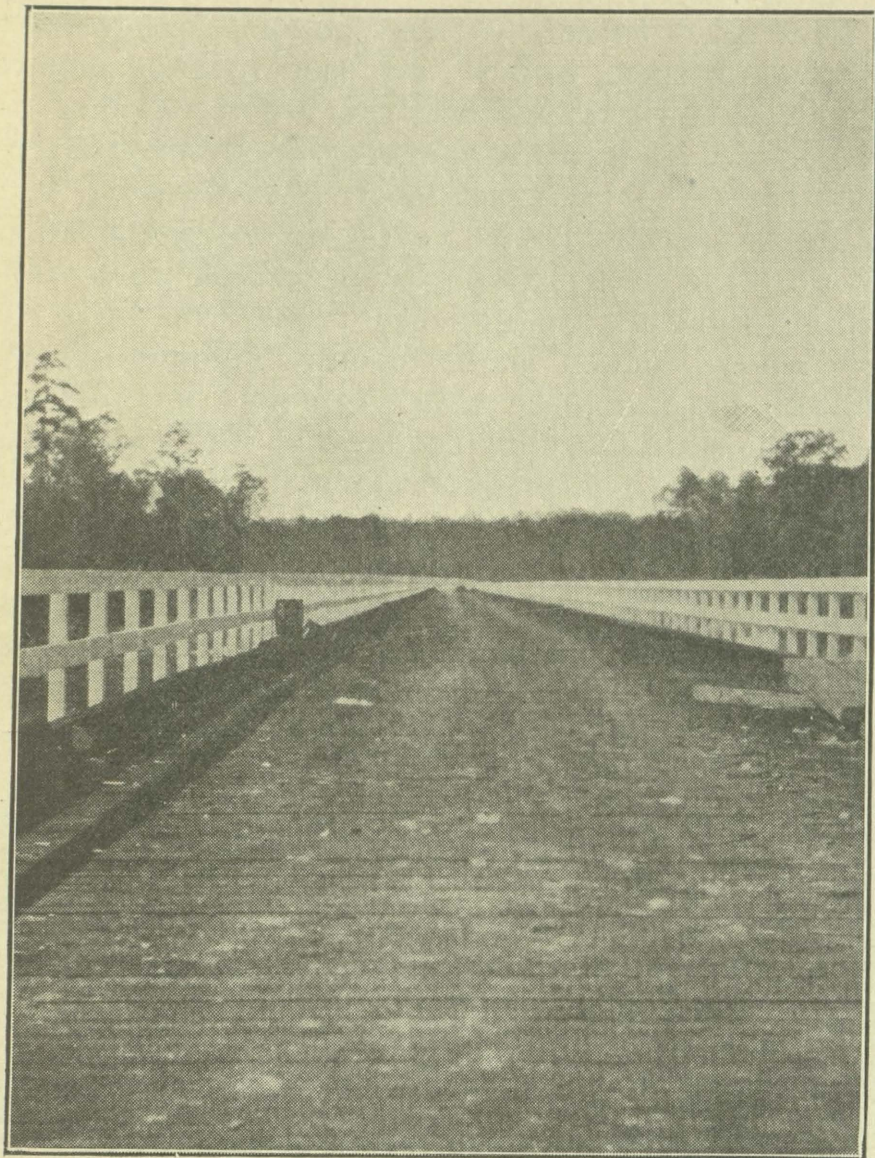
At a special meeting of the State Road Department held at Jacksonville on December 7th, contracts for road construction aggregating \$1,843,091.84 were awarded. These awards followed bids received and opened by the Department in Tallahassee on November 27th.

The projects covered, the successful contractor and the contract price are shown in the following tabulation:

### CONTRACTS AWARDED BY THE STATE ROAD DEPARTMENT, DECEMBER, 1923.

Contractor	Proj. No.	County	Length Road Miles	Length Bridges Feet	Estimated Cost	Type
Hardaway Contracting Co..	38-A	Escambia	2.3	4,752'	\$ 564,572.80	Embankment & Timber Bridges.
Morgan-Hill Pacing Co.....	521	Nassau	12.42	.....	277,846.33	Rock Base, Conc. Drain. Structures.
Langston Construction Co..	40-E	Brevard	13.59	.....	286,522.08	Rock Base.
C. F. Lytle.....	604	Volusia	7.72	.....	191,432.07	Rock Base.
F. S. Whitney.....	544-A	Pasco	8.75	.....	118,254.06	Rock Base.
Barber-Fortin Co.....	544-B	Pasco	11.33	.....	270,054.19	Rock Base.
Hunter & Gladwell.....	571	Madison	14.73	.....	85,900.21	Sand-Clay.
S. T. Buchanan & Son.....	576	Sarasota	5.68	.....	48,510.10	Graded and Drained.
			76.52		\$1,843,091.84	





Creosoted timber approach to Choctawhatchee river bridge, Federal Aid Project No. 20.

### GASOLINE TAX STATES

A tax on gasoline is now effective in 35 states, the tax in cents per gallon in force being shown in the table below. It is being recognized by automobile owners themselves that this is an equitable method of taxation for road purposes.

Name	Amount	Name	Amount
Alabama	2c	New Hampshire	1c
Arizona	1c	New Mexico	1c
Arkansas	3c	North Carolina	3c
California	2c	North Dakota	1c
Colorado	2c	Oklahoma	1c
Connecticut	1c	Oregon	3c
Delaware	1c	Pennsylvania	2c
Florida	3c	South Carolina	3c
Georgia	1c	South Dakota	2c
Idaho	2c	Tennessee	2c
Indiana	2c	Texas	1c
Kentucky	1c	Utah	2½c
Louisiana	1c	Vermont	1c
Maine	1c	Virginia	3c
Maryland	1c	Washington	2c
Mississippi	1c	West Virginia	2c
Montana	2c	Wyoming	1c
Nevada	2c		

—New Mexico Highway Journal.

## Talk by Captain Hillman Featured Rotary Luncheon

The Live Oak Rotary luncheon Monday was well featured. Rotarian Hillman was first on the program, and enthusiastically spoke on the subject assigned to him by the committee: "Good Roads." As Capt. Hillman is a member of the State Road Department all were eager to hear him. In substance his remarks were as follows: "In beginning I wish to say that with reference to the personnel of the State Road Department my remarks could be nothing else than complimentary. These are all fair men, Judge Phillips, Mr. Corry, Mr. Green and Mr. Schilling, and all are striving to do the very best they can, being impartial to all. I have been on the board from the time of its creation, some eight years, with the exception of a small interval. The board was established by law in 1915, but no funds were provided for functioning. This was the status for two years. At the end of two years the state convicts were turned over to it, but still no money was provided to maintain the convict camps. At this stage some of the counties proposed that they would supply the funds in consideration that the convicts work on their roads. Pursuant to this arrangement the convicts were scattered throughout the state.

With reference to road No. 1, I wish to explain that it is our purpose to rush to completion the sand-clay surface to its western terminus. In addition to the convict labor on this road we will let out sections by contract, and we hope to have the entire road com-

pleted at a very early date. It is not the purpose of the board to consider the sand-clay surface a completed road, but as a foundation for the hardsurfacing of same as soon as possible, and in the meantime affording a fairly good road for travel much earlier than otherwise could be accomplished. This plan is afforded on account of the conditions made favorable by deposits of clay along the entire route. In the southern part of the state this method cannot be followed, as there is no clay. We could make temporary roads there by using rock, but a rock bed without some protecting surface makes a bad road and is poor economy. Therefore a permanent road is the only feasible one for the southern part of the state. Some of the counties down there come before the board with the proposition that they will match dollar for dollar, and in that way we double the mileage for the same amount of State and Federal aid money.

On the 1st of last January from all sources the board had on hand a total working fund of \$735,516.93. During the first nine months of this year we received from all sources \$3,058,582.17, making a total of \$3,794,099.10. During these nine months we paid out \$3,280,468.31, leaving a balance September 30th of \$513,630.79. We will probably receive during the last quarter about \$1,000,000.00; if so, this will bring the total receipts for the year 1923 up to around \$4,000,000.00. This does not include con-



vict labor. It costs almost as much to maintain convict labor as it earns.

I haven't the figures at hand to disclose the mileage we have constructed, but altogether I believe it is around 500 miles—if not all completed, at least in good comfortable traveling condition. We will begin hardsurfacing the Lake City road next year, and continue until completed. We hope to have road No. 1 clay surfaced to the Chattahoochee river by the end of next year. Some of the counties west of there already have some mileage completed, and we will fill in the gaps as rapidly as possible, and just as soon as road No. 1 has a finished road bed of sand-clay we will at once begin the hardsurfacing of this road, and push it to final completion.

Of course, I am speaking with reference to the board as presently constituted. You know the mem-

bers hold office subject to the will of the governor who appoints them, and we are soon to have a new governor. I can't say whether this board will be continued, but if it is, with the increasing revenue resulting from the late gasoline tax, inspection, and auto license tax law, in two years you will see a much better road system in Florida than we have now. We are doing the very best we can. The trouble is we do not have sufficient funds to build at once all the roads needed, and there is a scramble from all sections of the state for their roads to be built first. In closing I wish to emphasize the fact that I cannot compliment my associates too highly for their fairness on all issues coming before the board. I thank you." The wholehearted applause that greeted the Old Warhorse as he took his seat attested the approval of all the Rotarians.—Suwannee Democrat.



Concrete Paving Mixer and Finisher working on 16-foot Concrete Paving.

### Indian Skeletons Unearthed by Road Builders

Skeletons of eight or nine Indians were found recently on the Chicago turnpike road, about six miles southeast of Brooklyn, Mich., where roadwork is being done. The skeletons were scarcely two feet under ground. With them were found a clay pipe, arm bracelets and other Indian relics.

Skeletons have been found in this section before. It was at one time a camp spot and is believed by some to have been a burial ground of an Indian tribe. The tribe was at one time ruled by Chief Siam and a school house about a half mile from the place is known as Siam school house.

Two bones lay in the middle of the road and were dug up by a steam shovel which crushed and badly broke many of them.—Ex.

### The Tiger in the City

Tigers in India killed 1603 people last year. The total of all the jungle animals' toll was 3263. That seems to make life precarious in parts. The population of British India is 319,075,000. The jungle killings took one in 97,785 of the population. The population of Cook county is 3,053,000. Automobiles have killed 440 people in the county in eight months of this year. That is one in 6933 inhabitants.—Chicago Tribune.

The first macadamized road ever built in the United States was the old Lancaster Turnpike, which ran from Philadelphia to Lancaster, Pa.



### FLORIDA ROUTES INSPECTED BY A. A. A.

A motor trip to Florida or to any other point in the Southland is no longer a hazardous adventure or task to be accomplished at the expense of great inconvenience or unusual repair bills to the motorist. This conclusion was reached by the Touring and Transportation Bureau of the American Automobile Association following the completion of an inspection of the most feasible routes between Washington and Florida points.

The inspection trip of the routes to Florida which is the second one made by official cars of the A. A. A. this season, was completed November 17.

A dozen combinations of routes leading from the northeastern section of the United States to Florida were uncovered by the A. A. A. scouts. There are detours on all routes, the majority of which, however, are kept in good condition. The minimum on any one combination is seven. To the motorist who wants the maximum mileage of good road, regardless of the distance traveled in reaching Florida routes can be offered him which will insure a fairly comfortable journey. To the motorist who is in a hurry shorter routings between high points which are generally travelable are offered.—Michigan Roads and Pavements.

### FLORIDA ROAD AND BRIDGE PROJECTS.

(Continued From Page Seven.)

County, has authorized advertisements for bids on \$250,000 worth of road paving bonds, the bids to be received December 18. They may be purchased either as a whole or in amounts of \$50,000 or more. They are a part of a road paving bond issue of \$2,000,000.—Manufacturers Record.

## Technical Goods

FOR

## Engineers and Contractors

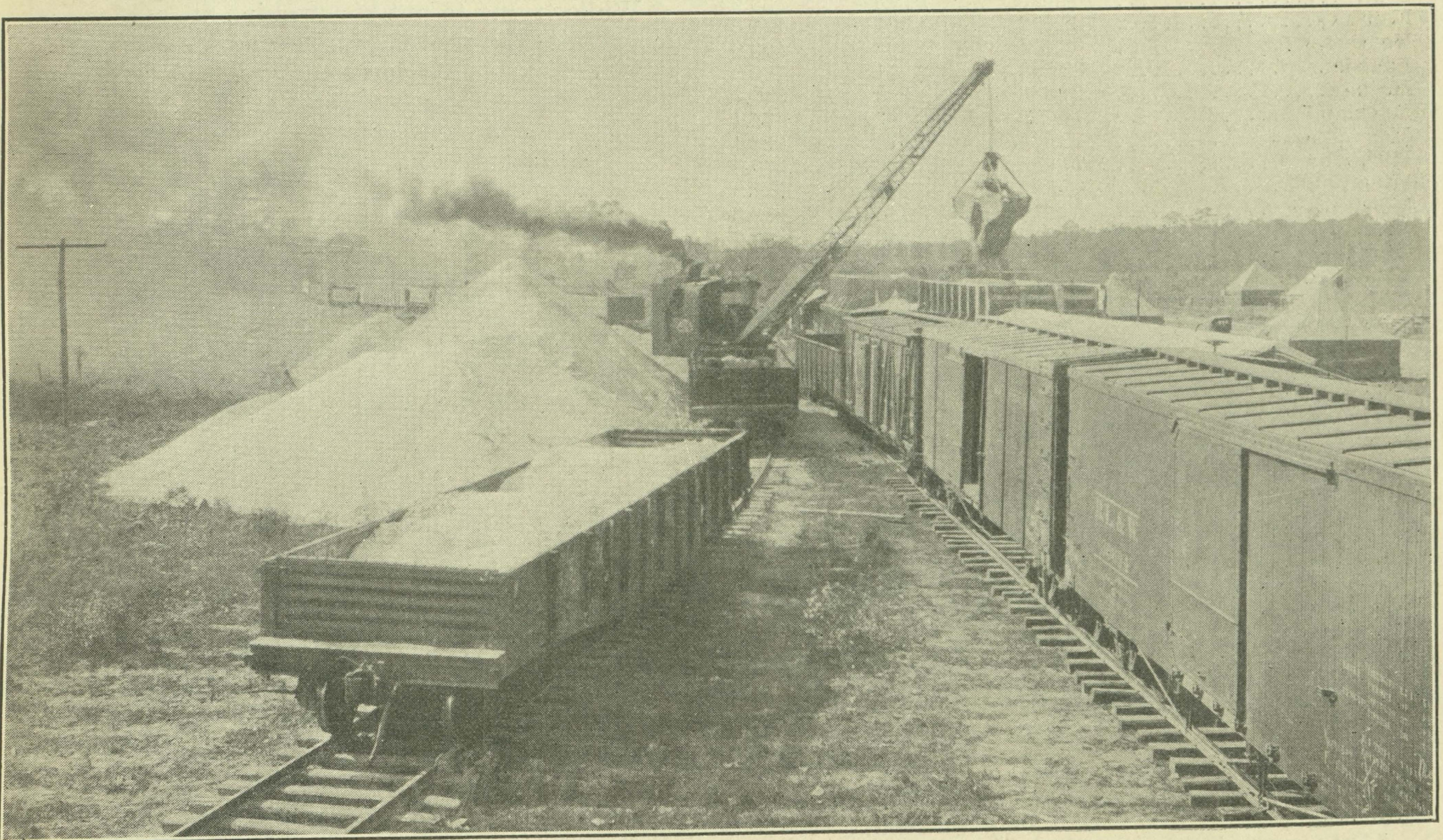
K. & E., GURLEY, BUFF & BUFF  
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Tapes

DRAFTING EQUIPMENT

THE H. & W. B.  
**Drew Co.**  
STATIONERY, BOOK AND ART STORE.

Office Furniture, Stationery, Books  
Printing and Lithographing



Stock yard on up-to-date Concrete Paving job, where approximately 30 carloads of material are being used daily. A part of one of the largest contractors' outfits ever operated in the South.



## U. S. HAS MORE THAN 400,000 MILES OF SURFACED ROADS, SURVEY REVEALS

The mileage of surfaced roads in the United States including sand-clay, gravel, macadam as well as those which have been paved, is well over 400,000 miles, according to the Bureau of Public Roads of the United States Department of Agriculture. At the close of the year 1921 the surfaced mileage was approximately 387,000 miles and 35,000 miles were constructed in 1922. It is believed that the 1923 construction will not fall short of the previous year's record and that by the end of the present year the surfaced mileage will be somewhere near 430,000 miles. This figure it is believed, makes due allowance for the fact that a portion of the 1922 and 1923 construction consists of the resurfacing of roads reported as surfaced at the beginning of 1922.

In the following table the total mileage includes all public roads located outside of the limits of incorporated towns and cities:

TOTAL MILEAGE AND MILEAGE OF SURFACED ROADS OUTSIDE OF CITIES AND TOWNS

State	Total Mileage	Miles of Surfaced Road Jan. 1, 1922	Miles Surfaced During Calendar Year 1922
Alabama	58,410	10,420	357.9
Arizona	21,227	1,233	413.5
Arkansas	74,866	3,871	872.5
California	75,889	14,275	988.2
Colorado	48,143	4,599	1,630.9
Connecticut	12,152	2,206	167.7
Delaware	3,933	448	79.8
*Georgia	94,000	18,000	1,060.0
Florida	27,643	6,438	437.9
Idaho	31,099	2,982	615.0
Illinois	96,326	11,473	*962.1
Indiana	76,246	39,857	2,435.1
Iowa	104,082	2,585	839.2
Kansas	128,552	1,101	271.0
Kentucky	68,704	15,436	603.0
Louisiana	39,803	2,771	756.0
Maine	21,483	2,953	349.7
Maryland	14,772	3,663	172.4
Massachusetts	18,868	6,575	236.1
Michigan	77,283	17,186	2,570.0
Minnesota	107,103	16,904	2,077.9
Mississippi	53,085	5,744	613.3
Missouri	111,520	7,880	465.7
Montana	64,732	1,772	129.2
Nebraska	86,556	496	160.0
Nevada	26,057	168	81.4
New Hampshire	13,841	1,691	145.8
New Jersey	14,061	6,505	319.2
New Mexico	45,549	1,802	298.6
New York	81,878	18,566	1,643.5
North Carolina	68,204	16,755	2,115.9
North Dakota	106,523	709	143.8
Ohio	84,219	36,067	1,205.0
Oklahoma	134,263	2,461	187.0
Oregon	45,475	8,050	978.5
Pennsylvania	90,991	13,921	942.0
Rhode Island	2,274	753	87.0
South Carolina	61,850	6,908	548.3
South Dakota	115,485	548	326.5
Tennessee	62,546	9,878	726.1
Texas	167,685	14,883	2,103.0
Utah	23,047	2,544	442.9
Vermont	14,677	3,545	148.5
Virginia	59,080	7,260	555.0
Washington	45,816	12,061	810.6
West Virginia	35,173	1,357	191.2
Wisconsin	78,679	19,714	1,958.1
Wyoming	46,528	440	138.1
* Data approximate.			
	2,940,378	387,464	35,360.1

## DETOURS

### Ford for Sale

One Ford car with piston rings,  
Two rear wheels and one front spring,  
Has no fenders, seats made of plank,  
Burns lots of gas, has no crank;  
Carburetor busted half way through;  
Engine missing, hits on two;  
Three years old, four in the spring;  
Has shock absorbers and everything.  
Ten spokes missing, front axle bent;  
Four tires punctured, ain't worth a cent;  
Got lots of speed, runs like the deuce;  
Burns either oil or tobacco juice.  
If you want this car, inquire within.  
It's a good Ford for the shape it's in.  
—Red and Black.

### It Isn't Done

Let poets sing their lilting song  
And gayly smite the lyre;  
Give me the man who whistles while  
He's putting on a tire.  
—Chicago Ledger.

And let us also pen a verse  
For him who sheds no tears  
While learning how to drive a car  
And strips off all the gears.  
—Macon Telegraph.

And don't forget some meed of praise  
For him who will not frown  
While trying to put his curtains up  
While the rain is coming down.  
—Jacksonville Times-Union.

For the man out of gas get the laurel  
And fashion a big bouquet,  
He's humming a song as he shuffles along  
To a phone just ten miles away.  
—Birmingham News.

### Shuffle On, Old Thing

The Ford taxi suddenly came to a halt in the middle of the street.

"What is the matter?" called the man from the back seat.

"I thought the young lady said 'stop,'" answered the chauffeur.

"Well, she wasn't speaking to you, was she?"—The Yellow Strand.

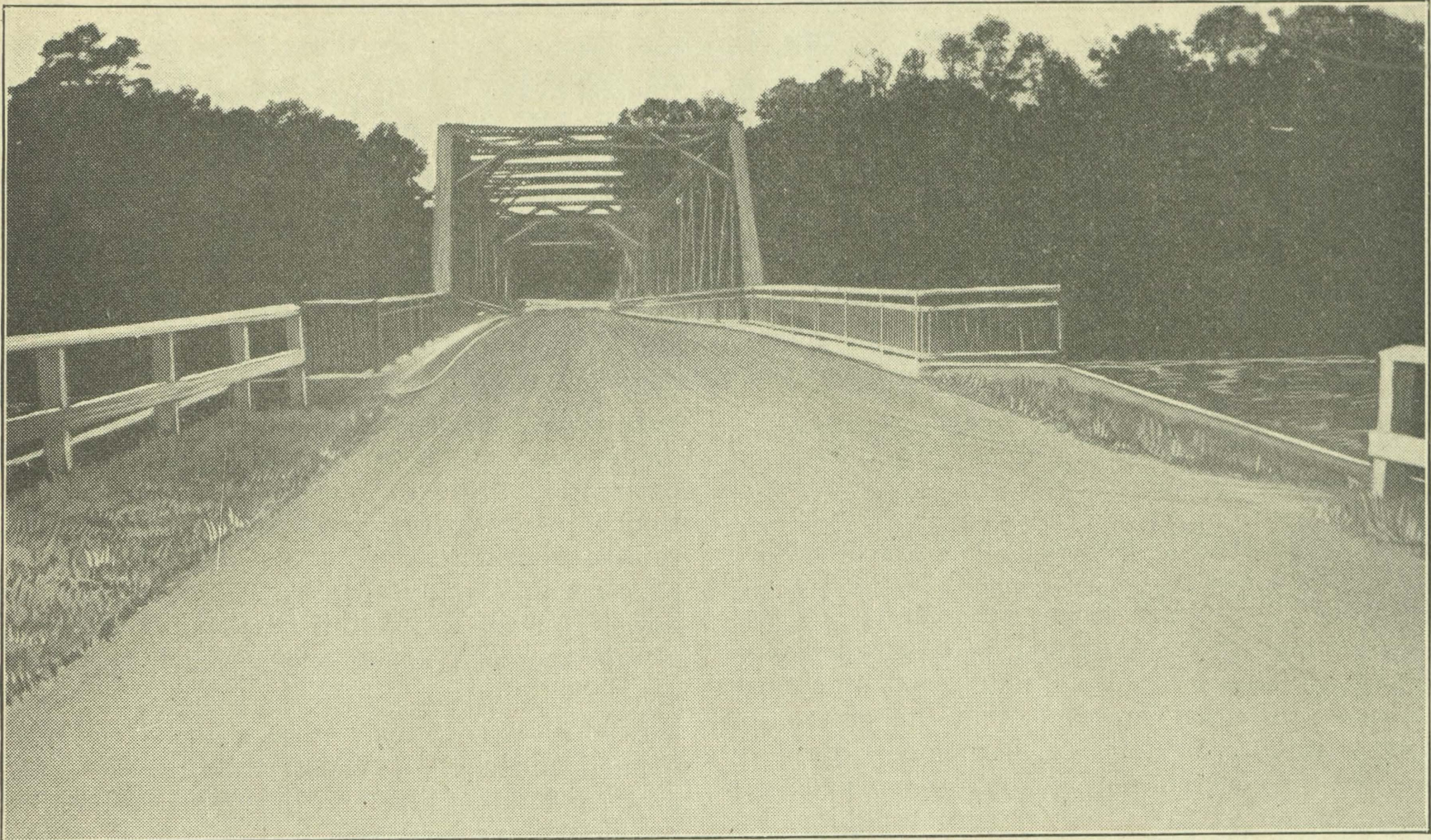
### Zowie!

They met on the bridge at midnight,  
They'll never meet again;  
She was an eastbound heifer,  
And he a westbound train.

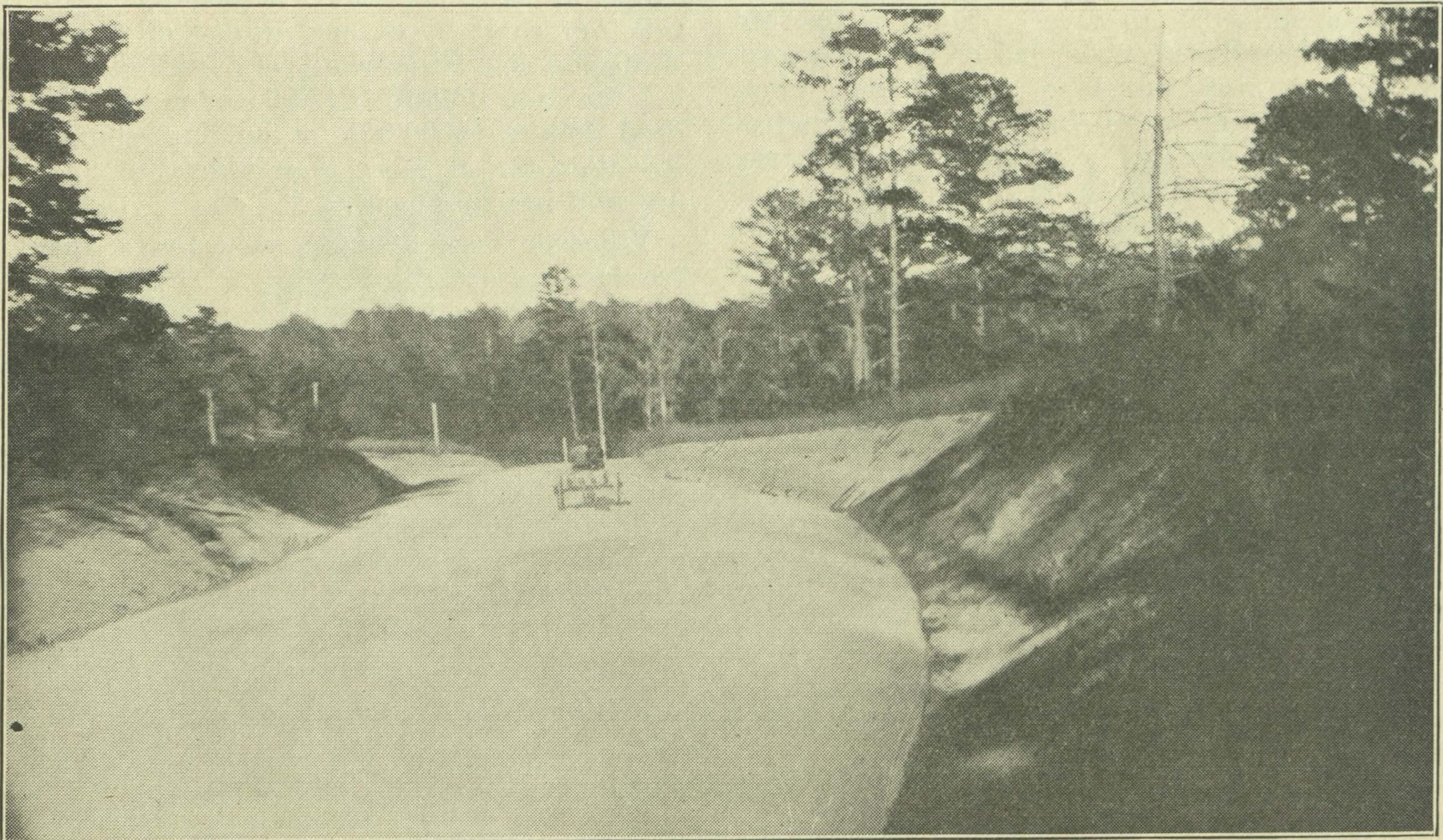
—Milestone.

Bill Hawkins—"I'm a little stiff from driving."  
Stranger—"Where did you say you were from?"  
—Detour.





East End Allapaha River Bridge, Road No. 2, Hamilton County.



State Road No. 1 Just East of Quincy, Sand-Clay.



## Florida's Traffic Law Enacted by the Legislature of 1923

### Chapter 9956—(No. 38)

AN ACT Prescribing Certain Regulations for the Use of and Traffic on State Roads; Prohibiting the Use of Certain Vehicles on Such Roads; Requiring the Equipment of Trucks with Mirrors and Specifying How the Same Shall be Installed; Fixing the Maximum Weight of Load That May be Carried on Such Roads; Defining the Term "State Road," and Fixing Penalties for the Violations of any of the Terms Hereof.

*Be it Enacted by the Legislature of the State of Florida:*

Section 1. It shall be unlawful to drive, propel or operate, or to cause to be driven, propelled or operated over any State Road, any vehicle or contrivance having wheels provided with sharpened or roughened surfaces other than roughened pneumatic rubber tires; provided, however, that this restriction shall not apply to vehicles or implements used by the State in the construction and maintenance of said State Roads, or to farm implements weighing less than one thousand (1,000) pounds, and provided with wheel surfaces of more than one half inch in width. Wheels of traction engines, et cetera, when provided with suitable filler blocks between cleats, shall be considered as having smooth tires.

Each such truck shall be equipped with a mirror located in such position as to show the driver thereof the approach of vehicles from the rear.

It shall be unlawful to drive, propel or operate, or to cause to be driven, propelled or operated, over any State Road any vehicle or contrivance, whose gross load on any one wheel shall exceed six hundred (600) pounds for each inch of width of tire on same; provided, further, that the width of solid tires shall be considered as that portion coming in contact with an unyielding surface, and the width of pneumatic tires shall be considered as the total thickness measured from outside to outside of casing at the widest point between tread and rim, when fully inflated with air; and provided, further, that no vehicle or contrivance whose gross load shall exceed sixteen thousand (16,000) pounds shall be moved or operated over any State Road.

It shall be unlawful to allow any vehicle or contrivance, or any part of same, or any load, or portion of a load, carried on the same to drag upon any State Road.

It shall be unlawful for any vehicle or contrivance, having a gross weight of more than four thousand (4,000) pounds to operate over any State Road at a rate of speed in excess of twenty miles per hour, when equipped with pneumatic tires, or at a rate of speed in excess of twelve miles per hour when equipped with solid tires.

It shall be unlawful to place or allow to be placed upon any State Road any tacks, wire, scrap metal, glass, crockery, or other substance which may be in-

jurious to the feet of persons or animals, or the tires of vehicles, or in any way injurious to the road.

It shall be unlawful to obstruct, dig up or in any way disturb any State Road. Provided, however, that this paragraph shall not be construed so as to hinder or prevent the installation or replacement of poles for telephone or telegraph wire lines in accordance with the provisions of law now existing or that may hereafter be enacted.

It shall be unlawful to tear down or deface any detour sign or to break down or drive around any barricade erected for the purpose of closing any section of a State Road to traffic during the construction or repair thereof, or to drive over such section of road until again thrown open to public traffic; however, such restriction shall not apply to the person or persons in charge of such construction or repairs.

Sec. 2. The Term "State Road" used herein is defined and shall be construed to mean any part of any road, including the bridges thereon, heretofore or which may hereafter be designated by the Legislature or by the State Road Department, in accordance with law, as a State Road, which has been, or may hereafter be constructed, maintained, or otherwise improved by the State Road Department, or which is now, or may hereafter be, in course of construction, maintenance or improvement by such Department.

Sec. 3. Any one who violates any of the terms of this Act shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by fine of not less than ten dollars (\$10.00) or more than five hundred dollars (\$500.00), or by imprisonment for not less than ten or more than ninety days, or by both fine and imprisonment.

Whoever damages any such State Road by any trespass on, or unlawful use of, or traffic over such road shall in addition to the penalties above prescribed be civilly liable for the amount of such damage, which amount may be recovered at the suit of the State Road Department, and when recovered shall be turned into the State Treasury and placed to the credit of the State Road Tax Fund.

Sec. 4. That this Act shall not affect any Special or Local law regulating road traffic in the several counties of this State.

Sec. 5. All laws and parts of laws in conflict herewith be, and are hereby, repealed.

Sec. 6. This Act shall take effect August 1st, A. D. 1923.

Approved June 8, 1923.

Non-skid concrete pavement has been produced by making broom marks on the surface of the freshly poured mixture. These marks remain exactly as they are marked for years.—Highway Engineer and Contractor.



## Two Stage Construction of Paved Roads

A number of projects, proposed or now under construction, on trunk-line state roads will include the placing of gravel for the surfacing strip over the improved section. The location, and the design of the roadway and structures contemplate the addition, when the traffic needs require, of a hard-surface pavement.

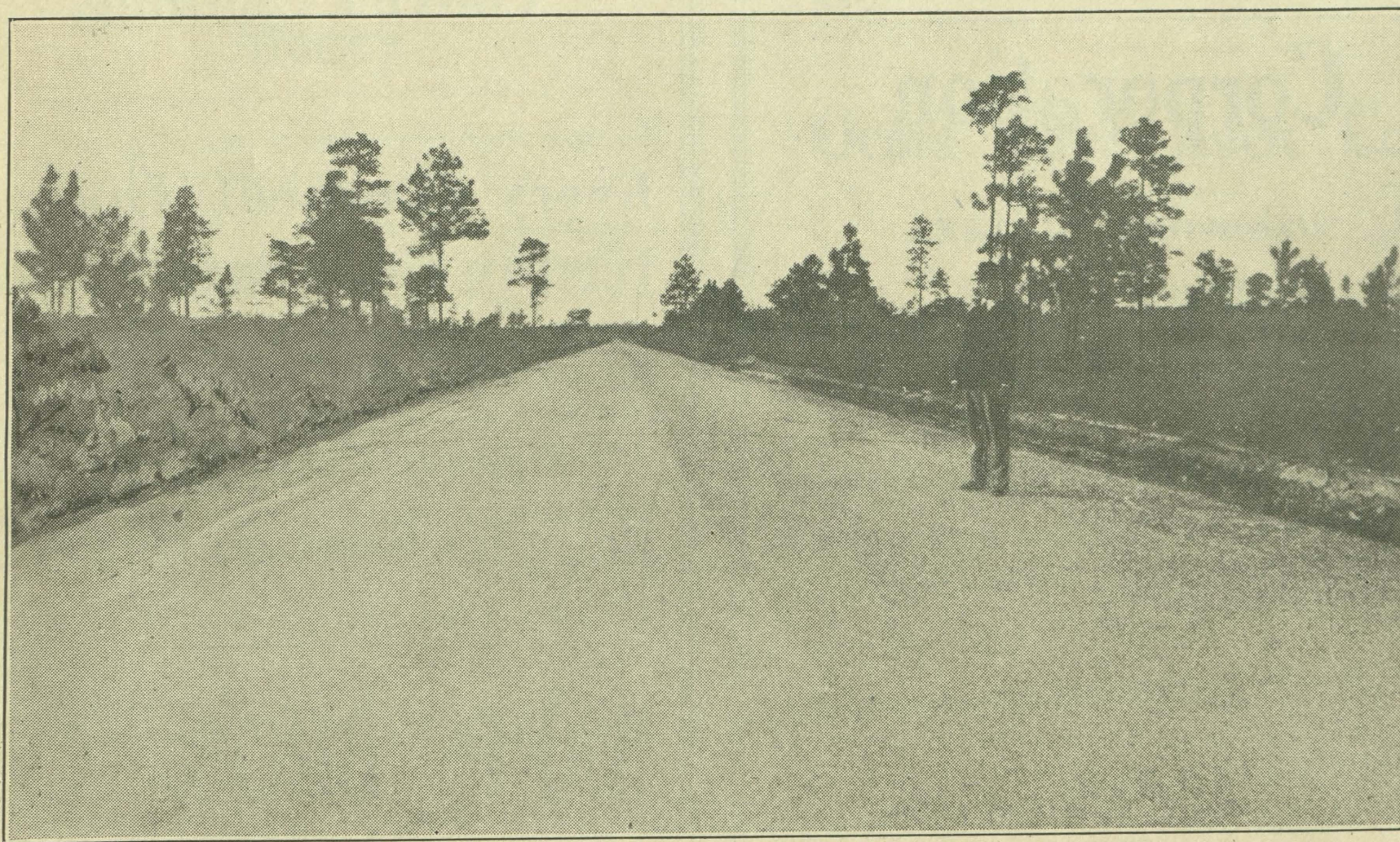
The object, then, of two-stage construction is to improve the existing roadway and provide a suitable subgrade for future hard surfacing; the preliminary stage being the construction of a gravel surfaced road including the improved drainage, grade and alignment requisite for the pavement foundation, the second stage the construction of the pavement when traffic needs justify the additional expense.

It is axiomatic that whatever is worth doing is worth doing well, and it is natural that a community should desire, when a road begins to break down under traffic, to replace it with the best that can be obtained—to go at once from dust and mud holes, unsafe timber structures and broken-backed vertical curves, to permanent structures, sightly alignment, easy grades and a smooth, easy-riding pavement. That is, from a more or less passable road to an ideal road.

Of course where traffic needs justify, a pavement should be laid, but the fact should not be lost sight

of that with two-stage construction many of the improvements desired are gained and, comparatively, with much less time and expense. Adequate and permanent drainage structures can be had, easy grades with balanced cuts and fills and a pleasing alignment can be had, all at an average cost, in open country, of about \$4,000 per mile—two-course gravel surfacing 18 feet wide will cost another \$4,000. That is, a road with a well-packed gravel surface and in every way suitable for a paving base with very little additional cost can be built for \$8,000. Grading and paving with concrete 6 inches thick, 18 feet wide, will cost about \$32,000 per mile; \$4,000 for the grading and structures and \$28,000 for the pavement. Four miles of gravel surfaced road can be built for one of pavement and the cost of concrete surfacing is seven times that of gravel surfacing. At five per cent the difference between interest charges for the two types of construction is \$1,200 annually, three times the cost of effective maintenance of the gravel road by the patrol system.

By the use of two-stage construction the federal aid funds available can be extended to include much needed road improvement and a well-constructed gravel road will form an ideal base for a pavement when the traffic needs require a higher type of surfacing.—Utah Highways.



Bituminous Macadam Surface, Road. No. 4, F. A. Proj. 32, Nassau County.



**INSTALLED**

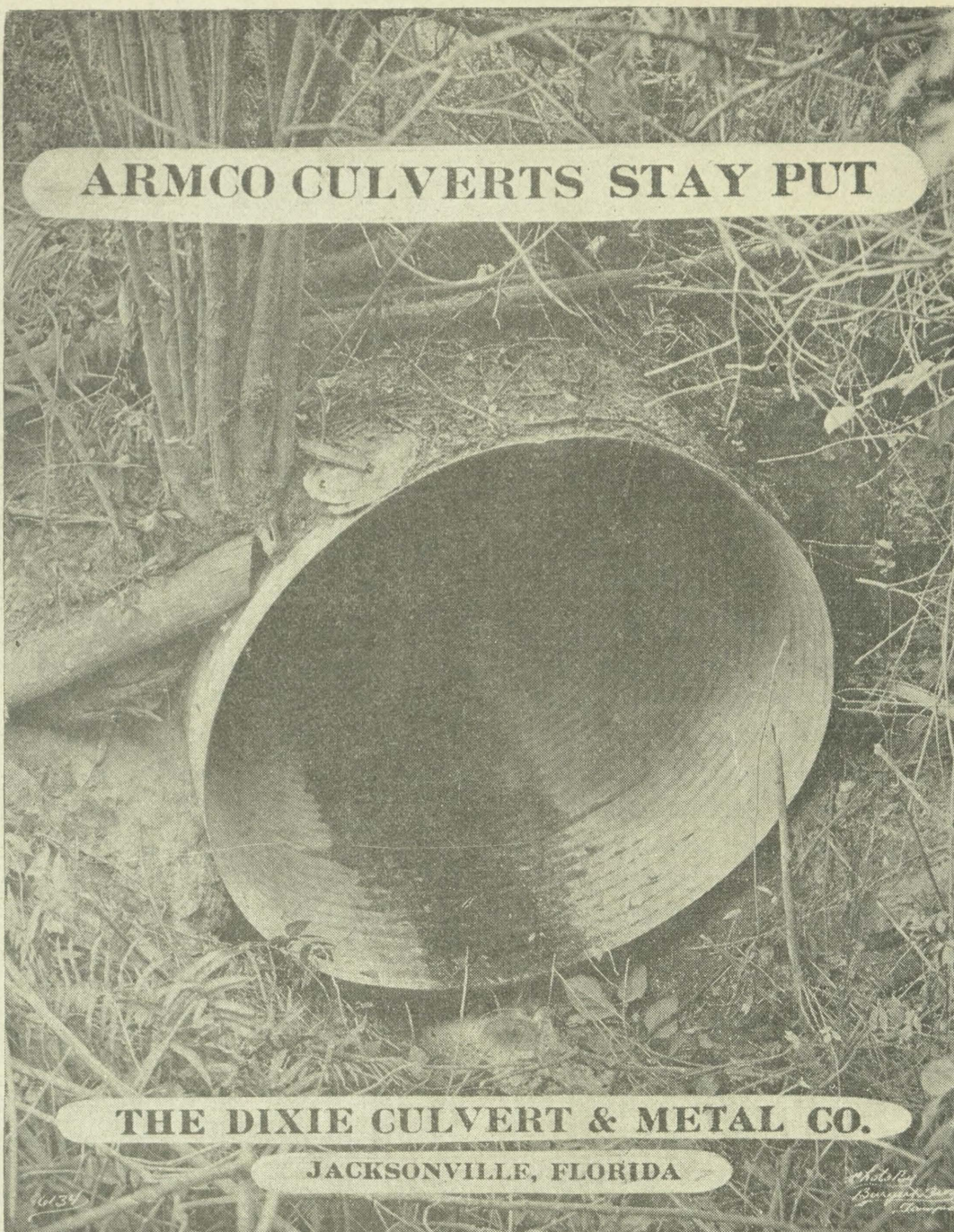
**1908**

**NEAR**

**TAMPA  
FLORIDA**



**ARMCO CULVERTS STAY PUT**



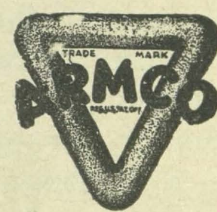
**THE DIXIE CULVERT & METAL CO.**

**JACKSONVILLE, FLORIDA**

**CONDITION**

**1923**

**PERFECT**



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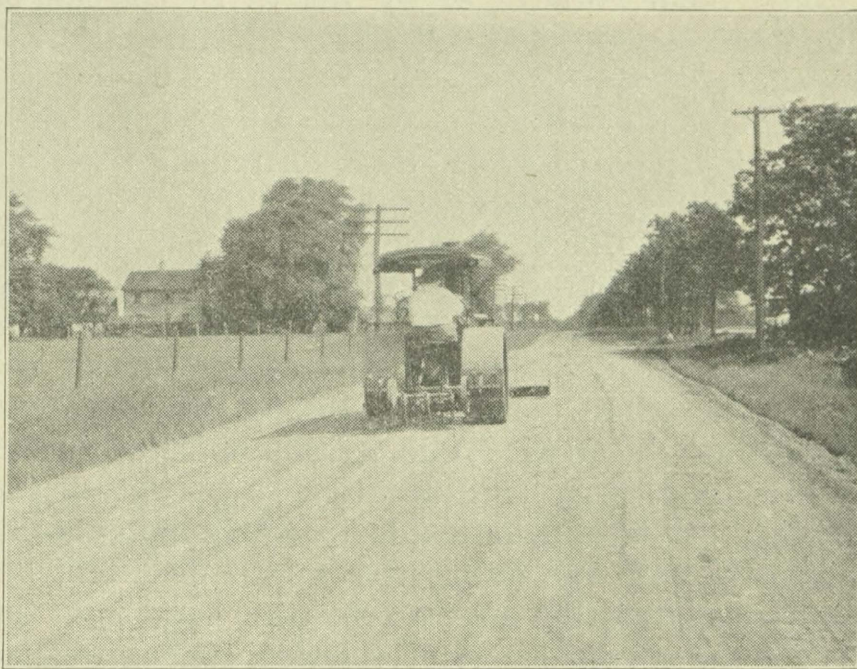
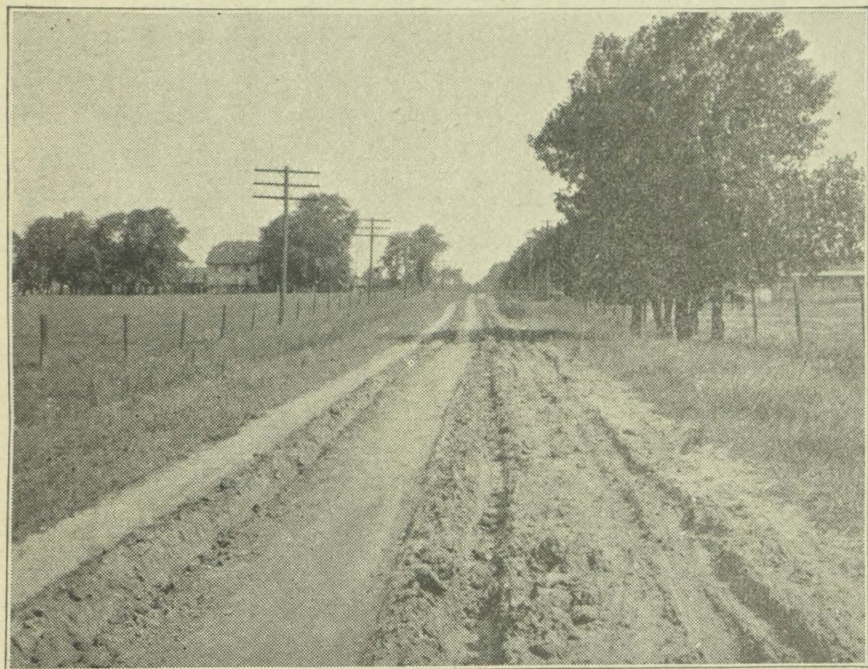
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## Ocala Lime Rock Co.

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## HOW TO MAINTAIN DIRT ROADS.

(Continued from page 4.)

this operation is done with a small drag or a grader, the underlying principles are the same. The following, taken from bulletin 31 by the U. S. Bureau of Public Roads, is so complete and well stated that it is reproduced here:

"The principle factor in successfully operating a properly constructed road drag, provided that the condition of the road is favorable, is skill on the part of the operator. Under ordinary circumstances the position of the hitching link on the draw chain should be such that the runners will make an angle of from 60 degrees to 75 degrees with the center line of the road, or, in other words, by lifting or otherwise manipulating the drag. The length of hitch is another very important consideration in operating the road drag. It is impracticable to prescribe even an approximate rule for fixing the length of hitch, because it is materially affected by the height of the team and the arrangement of the harness, as well as by the condition of the road surface. Experience will soon teach the operator, however, when to shorten the hitch in order to lessen the amount of cutting done by the front runner and when to lengthen it in order to produce the opposite effect. When the road surface is sufficiently hard or the amount of material which it is desired to have the drag move is sufficient to warrant the operator standing upon the drag while it is in operation he can greatly facilitate its work by shifting his weight at proper times. For example, it is desired to have the drag discharge more rapidly, the operator should move toward the discharge end of the runners. This will decrease the ditch end of the runners to swing forward and thus increase the skew angle of the drag. The operator may, of course, produce the opposite effect by moving his weight in the opposite direction. In the same way, he can partially control the amount of cutting which the drag does by shifting his weight backward or forward, as the case may be.

**When to Use the Drag**

"It is fully as important that a road be dragged at the right time as it is that the dragging be properly done. The rule frequently cited, that all roads should be dragged immediately after every rain, is in many cases entirely impracticable and is also very misleading because of the conditions which it fails to contemplate. It is true that there are many road surfaces composed of earth or earthy material which do not become very muddy under traffic, even during long rainy seasons, and since such surfaces usually tend to harden very rapidly as soon as the weather clears up, it may be desirable to drag roads of this kind immediately after a rain. Such roads, however, would not ordinarily need to be dragged after every rain, because of the strong tendency that they naturally possess of holding their shape. On the other hand, many varieties of clay and soil tend to become very muddy under only light traffic after very moderate rains, and it is evident that roads constructed of such materials could not always be successfully dragged immediately after a rain. Sometimes, in fact, it may be necessary to wait until several consecutive clear days have elapsed after a long rainy spell before the road is sufficiently dried out to keep ruts from forming almost as rapidly as they

can be filled by dragging. In many cases of this kind, however, it is possible greatly to improve the power of the road to resist the destructive action of traffic during rainy seasons by repeatedly dragging it at the proper time. Well constructed sand-clay and topsoil roads should not often become muddy after they are once well compacted. They may become seriously rutted, however, under heavy traffic, during rainy weather, and are almost sure to need dragging several times each year. Such roads should ordinarily be dragged as soon after a rain as practicable, as otherwise the surface soon becomes dry and hard, so that it is necessary to do considerably more dragging in order to fill the ruts. Furthermore, the material which the drag moves will not compact readily unless it contains a considerable amount of moisture. In general, it may be said that the best time to drag any type of road is when the material composing the surface contains sufficient moisture to compact readily after it has been moved by the drag and is not sufficiently wet for the traffic following the drag to produce mud."

## FEDERAL TAXES AND ROADS.

(Continued from page 12.)

"Some of the most important ways in which highways have a demonstrable earning capacity," Mr. Wallace said, "are the potential savings in cost of operation, maintenance, and depreciation of motor vehicles. It is estimated that the annual fuel bill paid by motor vehicles amounts to \$1,000,000,000 and the annual tire bill is estimated at \$450,000,000. Annual depreciation must be computed on an estimated investment of \$8,767,500,000 in motor vehicles." These estimated figures, the Secretary believes, are a reasonable indication of the magnitude of the financial side of our motor transport equipment. It is evident that the operating costs will be affected materially by general improvement of highways.—B. M. Joyce in Western Highways Builder.

**Still Going Strong**

"How long did it take your wife to learn to drive?"

"It will be ten years this coming September."—Literary Digest.

**Progress**

News sheets each Monday morning

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"Three drown as boat capsizes!"

But that was years ago

They keep another heading

In type today, alas!

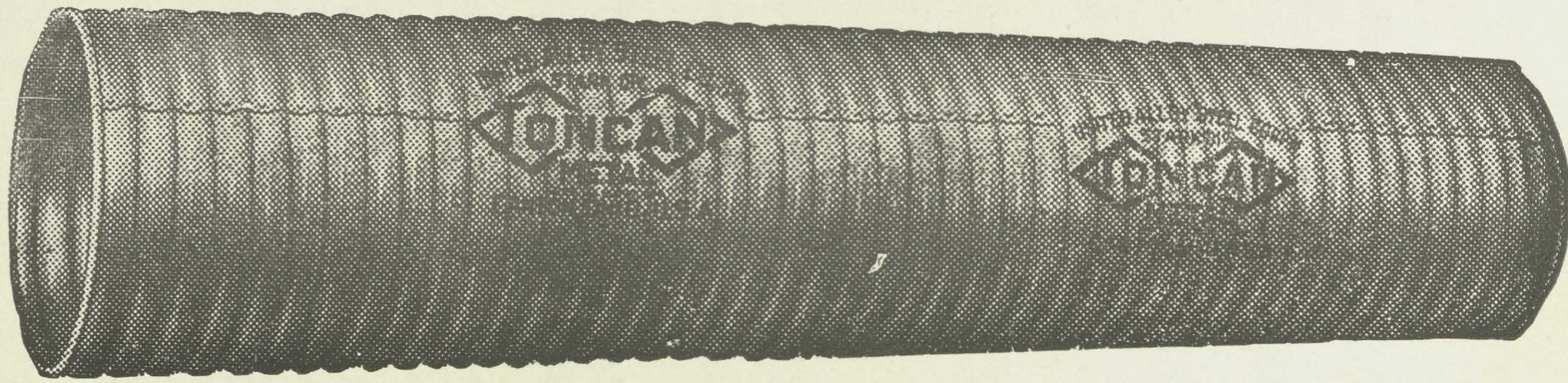
For the goof who used to rock the boat,

Nowadays steps on the gas.—Judge.

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